DOD HAZARDOUS MATERIALS MANAGEMENT BUSINESS PROCESS REENGINEERING

HAZARDOUS MATERIALS PROCESS CONTROLS AND INFORMATION MANAGEMENT REQUIREMENTS DOCUMENT

Phase 1 – Operations and Sustainment Portion of the Installations and Weapon Systems Lifecycle

Office of the Deputy Undersecretary of Defense
(Installations & Environment)
Business Enterprise Integration Directorate

DoD Real Property & Installations Lifecycle Management
Core Business Mission Area
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Executive Summary

The Department of Defense (DoD) hazardous materials management capability is functionally fragmented, material-centric, compliance focused, and inefficient. Hazardous materials are crucial to mission accomplishment, but they also increase business costs and pose significant risks to people, property, the environment, and mission capability. For cost and risk reasons, rigorous control of hazardous materials, throughout the lifecycle, is essential for safe, environmentally sound, efficient, and cost effective DoD mission operations.

Implementation of hazardous material "pharmacies" over the past decade provides a solid basis for the control of hazardous materials in DoD; however, Component subject matter experts saw opportunity for improvement – in the areas of jointness, interoperability, operational efficiency, and Environment, Safety, and Occupational Health (ESOH) performance – through the establishment of standard hazardous materials management processes, data requirements, and business rules.

The first phase of the hazardous materials (hazmat) business process reengineering (BPR) focused on reengineering hazardous materials management in operation and sustainment activities across DoD, specifically directed at process authorization and supporting product hazard data. This document presents the technical requirements resulting from Phase 1 of the BPR. These technical requirements define the initial DoD business process and core ESOH data requirements for hazardous material control in the operations and sustainment stage of installations and weapon system's lifecycle activities. The BPR-developed business process is entitled, "Product Hazard Data (PHD) Process (Sustainment)." This business process gathers data that defines, in detail, the hazardous material-related mission activity, and the characteristics of the associated hazardous materials to support an ESOH risk assessment and development of ESOH controls.

ESOH controls are "operational controls" in the context of an environmental management system. In the Product Hazard Data Process, ESOH controls are adjudicated by ESOH personnel and the mission process owner to develop a "hazardous process authorization." The agreed-upon ESOH controls, as documented in the hazardous process authorization, must be implemented in the context of the relevant mission activity.

In essence, the outcome of the PHD Process is a hazardous material-related mission activity in which the hazards associated with the hazardous materials are fully controlled and protective of people, property, environment, and mission capability. Other hazardous materials development initiatives will expand and build from this Phase 1 foundation in subsequent BPR phases.

Overview

Background

The President and the Secretary of Defense have challenged the military to transform itself to meet current and future challenges to American security. Clearly, the envisioned transformation is about more than leading-edge weapon systems, doctrinal innovation, and the employment of technology; it also concerns changing our fundamental business practices within the Department[1]. Enabling fundamental transformation is a key imperative of the I&E community.

Within Defense Business Transformation, the I&E community is working collaboratively with acquisition, logistics, operations, financial, and personnel communities to integrate ESOH into business processes across all functional areas. Integration of ESOH considerations into Defense business practices is essential to sustainable operations, the overarching focus of DoDD 4715.1[2], "Environment, Safety, and Occupational Health (ESOH)." Leveraging this policy and building on the success of existing ESOH programs, the Department is evolving from "compliance management" to a mission-oriented focus on sustainable operations. The Office of the Deputy Under Secretary of Defense for Installations and Environment (ODUSD(I&E)) and the Business Enterprise Integration (BEI) Directorate, are working within Defense Business Transformation to support the Department's ESOH strategy (http://www.acq.osd.mil/ie/) and policy, and to expedite the Department's transformation toward sustainable operations.

Scope

Effective control of hazardous materials across the lifecycle of DoD installations and weapon systems is a key component of the DoD transformation toward sustainable operations. The DoD hazardous material Business Process Reengineering (BPR) team determined early-on in the BPR that the magnitude and complexity of the lifecycle hazardous material reengineering effort mandated a phased approach, with each phase subject to I&E Domain Governance Board (DGB) review and approval.

The scope of hazardous material BPR, Phase 1 focused on gathering essential product hazard data and developing "hazardous process authorizations" for hazardous material-related mission processes in the operation and sustainment (O&S) phase of the lifecycle. With respect to product hazard data specifically, the scope included the data associated with the American National Standards Institute (ANSI) standard material safety data sheet (MSDS), and deferred for future BPR phases the sections on regulatory information, fire fighting measures and transportation information.

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1 Defense Installations Strategic Plan, 2004, http://www.acq.osd.mil/ie/download/2004-disp.pdf, active November 18, 2005

2 DoD Directive, *Environment, Safety, and Occupational Health (ESOH)*, dated Mar 19, 2005, http://www.dtic.mil/whs/directives/corres/pdf/d47151e_031905/d47151ep.pdf, active November 18, 2005

Future Phases of the Hazardous Material BPR

"End-to-end," or lifecycle management of hazardous materials in DoD is the overall scope of the hazardous material BPR. As mentioned above, Phase 1 of the hazardous material BPR was limited to initial steps to address the operations and sustainment phase of the lifecycle. This highlights the need for future phases of the hazardous material BPR to address outstanding, hazardous material-related transformational requirements, such as identification of transportation, fire fighting, and regulatory business rules and data, as well as addressing the remaining phases of the installations and weapon systems lifecycle, e.g., acquisition and disposal. Requirements for subsequent phases will be developed collaboratively through joint, cross-functional teams of appropriate subject matter experts.

Purpose

This document communicates the initial business process and data requirements for the operation and sustainment phase of the DoD hazardous materials business process reengineering initiative. Implementation of these first phase requirements provides timely, authoritative product hazard data (excluding the MSDS sections on regulatory information, fire-fighting measures and transportation information) and effective ESOH operational controls for mission activities involving hazardous materials. Requirements resulting from subsequent BPR phases will be released as the BPR progresses.

Document Organization

The framework of this document consists of an executive summary, four key sections, and appendices containing detailed requirements. The four key sections provide summary text designed to answer the following DoD questions:

- What is the needed capability?
- What is the current capability?
- What is the capability gap?
- What is required to eliminate the gap?

Each appendix provides details related to a portion of the requirements. This document does not include BPR Team work products such as the scope document or other background information developed during the course of the BPR. When appropriate, specific BPR work products will be provided upon request to ODUSD (I&E)/BEI.

What is the needed capability?

The Department of Defense requires a joint, interoperable capability to identify, reduce, and eliminate the ESOH risks posed by hazardous materials. Careful and deliberate consideration of hazardous materials risks and costs across the lifecycle of DoD mission activities is essential for sound management decisions and protection of personnel, property, and environment, along with warfighter mission capability.

Weapon systems and installations operations and sustainment (O&S) activities are principal drivers of DoD's need for hazardous materials. Organizations across the Department develop the requirements for procurement, handling, transport, use, and disposal of hazardous materials as an inherent part of their mission activities. The pervasiveness of hazardous materials in the DoD mission calls for equally pervasive and effective controls – referred to as ESOH controls or more simply as *controls*.

ESOH controls are an example of "operational controls," as defined in the International Standard, ISO 14001, *Environmental Management Systems – Specifications with Guidance for Use*. The required capability must develop ESOH controls in a collaborative process involving the mission process owner and the ESOH community. Implementation of ESOH controls must be an integral part of ESOH management systems that are required in current DoD and Component policy.

Establishment of the Hazardous Material Process Control and Information Management capability requires compilation of and timely access to complete, accurate, and authoritative hazardous materials information. Because the risks posed by any hazardous material are a function of both the mission process (e.g., use, storage, or transportation) and the characteristics of the hazardous material, effective ESOH controls must be developed in the context of the mission process. For example, requisitioning a hazardous product requires approval. Approval of a hazardous product requires well-informed, risk-based decision-making. The more complete and accurate the hazard information is, the better the resulting ESOH controls are in any mission setting.

What is the current capability?

Over the past two decades, implementation of hazardous material "pharmacy" concepts has improved management of hazardous materials across the Department. Regardless of past advances, DoD missions and the training and operational environment continue to drive requirements for more rapid access to larger sets of authoritative data at installations across DoD. The Components have responded to these requirements by establishing Component-specific, and often functionally stove-piped, hazardous materials management business processes. These business processes, often enabled by independent and diverse information management systems, have resulted in a Component hazardous materials management capability that is functionally fragmented, material-centric, compliance focused, and inefficient.

Today's diverse hazardous materials management approaches have resulted in varying degrees of hazardous materials management capabilities within and among the Components. These differences undermine interoperability and result in variability in levels of ESOH control, costs, and operational efficiency. In addition to costs associated with using hazardous materials, today's information technology (IT) systems also limit enterprise agility and interoperability. Development, maintenance, and upgrade of often-parallel systems multiply costs and create unnecessary risks to people, property, the environment, and the defense mission.

What is the capability gap?

We are not consistently meeting warfighter needs for hazardous material risk management, hazard data, and standard levels of ESOH control. Specifically, DoD decision makers, managers, and commanders lack reliable access to accurate, authoritative and standard hazardous materials data. This gap in data and ESOH operational controls creates unnecessary risks to people, property, the environment, and mission capability—all of which create inefficiencies and increase costs while limiting interoperability.

The BPR team identified a number of specific gaps in today's hazardous materials management capability in DoD:

Common Terminology: DoD lacks a common language and metadata for communicating hazardous materials information.

Core Data: DoD does not have joint, core data to support lifecycle hazardous materials management across the Department.

Authoritative Data: DoD lacks a reliable, central, authoritative source for standardized product hazard data, e.g., product data as found on the material safety data sheet or otherwise provided by the supplier, reference data, and government unique data.

Redundant and Incompatible Systems: Current IT systems are not effectively interfaced, integrated, or interoperable. They exist in parallel, often requiring independent and duplicative data entry and maintenance.

ESOH Controls: ESOH controls are not consistently developed in partnership with the process owner, or with focus on the mission process as a whole. ESOH controls are not effectively communicated across the Components' hazardous materials management processes or mission operations. Additionally, ESOH controls are not thoroughly integrated into other core business mission areas. This results in variable degrees of protection afforded to warfighters at different installations or deployed locations.

Product and Data Linkage: Current supply chain management practices do not provide unique linkage of hazardous products and the associated hazard data. This gap in capability results in unreliable data and unnecessary risk to handlers and end-users of hazardous products.

What will eliminate the gap?

Implementing the requirements detailed in appendices A-E across the Components will establish the desired hazardous materials process controls and information management capability in operations and sustainment (O&S) mission processes, with the limitations described in the Scope section of this document.

Recognizing and controlling the hazards in defense mission activities is essential to achieving sustainable operations. Meeting today's mandates for interoperability, efficiency, effectiveness, and sustainable operations requires a common, joint hazardous materials business process that is enabled by accessible, authoritative data to establish firm operational control of the ESOH aspects of DoD mission activities. The initial requirements for the Hazardous Materials Process Controls and Information Management Capability, as documented here, provide a transformational step forward in support of these mandates.

Integrating and implementing the Hazardous Materials Process Controls and Information Management requirements in this document across the Department will:

- institutionalize common processes, terms, definitions, and business rules for hazardous materials management that effectively and efficiently control ESOH hazards
- enable effective ESOH operational control through environmental or ESOH management systems
- enable the DoD Net-centric data strategy to ensure lifecycle availability of complete, accurate, reliable, and timely data for managers and commanders as well as users and decision makers at all levels of the Department
- enable rigorous and objective development of process-centric ESOH controls for mission activities involving management of hazardous materials throughout the O&S phase of the lifecycle to provide a foundation for sustainable operations and effective asset management, and
- enable visibility and accountability for hazardous materials in the O&S phase of the lifecycle

Eliminating the capability gap requires implementing the reengineered process, business rules, and common data requirements. This document describes the process that, once implemented, establishes the envisioned hazardous materials process controls and information management capability for O&S mission activities. Detailed requirements are in the appendices.

Process Model

The process depicted as Appendix A: Hazardous Materials Product Hazard Data Process (Sustainment) collects required hazardous material data and mission process data to generate the ESOH controls for safe and sustainable execution of O&S mission processes involving hazardous materials.

In general, the process begins with the identification of a need for hazardous material data in a DoD process. Then, the process determines availability of the product hazard data necessary to support risk assessment and controls development. The process gathers product hazard data from a variety of sources to include external, DoD, and other government sources. The ESOH community develops risk-based controls after evaluating the process data provided by the process owner or operator, and product hazard data. Adjudication of the controls by the ESOH community and process owner or operator results in a documented process authorization. Once authorized, a process owner or operator may execute a process in accordance with the ESOH controls.

The PHD process model depicts the flow of data among business functions that define controls and achieve business objectives.

Business Rules

Policy, guidance, or standard operating procedures for the PHD process will incorporate the

Appendix B: Product Hazard Data (PHD) Process – Operational Business Rules. In general, the operational business rules for the PHD process clarify and control the process depicted as Appendix A: Hazardous Materials Product Hazard Data Process (Sustainment).

Core Data Elements

PHD core data elements are the DoD core data required to establish and sustain the hazardous materials process controls and information management capability. These elements are listed with definitions mapped to the PHD logical data model attributes are in Appendix C: Product Hazard Data (PHD) Data Elements. The data elements not yet mapped and incorporated into the logical data model are in Appendix G: Data Elements Not Yet Included In the Logical Data Model

Product Hazard Data (PHD) Logical Data Model Views and Tables

The product hazard data is in Appendix D: Product Hazard Data (PHD) Logical Data Model. In general, this includes data from the material safety data sheet (MSDS), DoD and government sources, along with reference sources, such as Chemical Abstracts Service (CAS).

Product hazard data is the comprehensive set of material, chemical, and regulatory data necessary to develop and implement ESOH controls for mission activities involving hazardous materials.

Logical data model development for the regulatory portion of the logical model, along with fire fighting measures and the transportation information sections, will be addressed in another phase of this BPR. The logical data model views and entity – attribute tables are in Appendix D: Product Hazard Data (PHD) Logical Data Model.

Hazardous Process Authorization Logical Data Model Views and Tables

DoD's reengineered process focuses on controlling hazards. Understanding and mitigating potential hazards to people, property, the environment, and mission capability before undertaking hazardous work is the fundamental goal of this process.

The reengineered process requires authorization for the process (mission activity) that could result in potential hazards to people, property, environment, and mission capability prior to execution of the process. The hazardous process authorization consists of a structured assessment of the environment, safety, and workers' health issues associated with the mission process. It results in approval to conduct an O&S mission process and the controls necessary to satisfy ESOH and operational needs. More specifically, the assessment includes particulars on any hazardous materials involved in the process but it also includes use methods, required protective equipment, exposure limits, acceptable work conditions, training requirements, location of the work activity, and other relevant factors as well as assessment of the work byproducts.

At its most basic, the hazardous process authorization generates the set of required ESOH controls for a specific work process.

The hazardous process authorization logical data model views and entity – attribute tables are in Appendix E: Hazardous Process Authorization (HPA) Logical Data Model.

Change Control

After the hazardous material BPR Phase 1 requirements are approved by the DGB and integrated into the DoD BEA, modifications of the established requirements will be accomplished through a change control process. The change control process will be developed by the Business Enterprise Integration (BEI) directorate in coordination with the hazardous materials BPR scope team and submitted to the I&E DGB for approval by the BEA 4.0 release date (September 30, 2006).

The envisioned change control process for hazardous materials requirements will be functionally consistent with the Configuration/Support Panel established by the I&E DGB for the Real Property Inventory Requirements. The hazardous material change control process will provide for a joint team, at the BPR scope team level, that receives, records, evaluates, and adjudicates change requests. BEI will lead the joint team and will advocate for the team's consensus position on change request actions within BTA and the DoD BEA.

Hazardous Material Requirements within the DoD Business Enterprise Architecture

The hazardous material BPR requirements are an integral part of the DoD BEA. While the RP&ILM community is the primary proponent for the integration of these requirements, they impact, or are impacted by, virtually all functional areas across DoD.

"Appendix F: Hazardous Material Logical Data Model Integration Points" includes additional BEA integration information to include a "touch points" table and a visual representation of the data model integration points in the entity relationship diagrams (ERDs) as Figure 13 and Figure 14. These provide a good illustration of the "integrated" nature of hazardous material requirements, as reflected in the diversity of BEA Version 3.1 entities linked to the hazardous material data requirements in the DoD BEA OV-7 data model.

Appendix A: Hazardous Materials Product Hazard Data Process (Sustainment)

Figure 1: Hazardous Materials Product Hazard Data Process (Sustainment)

Graphics placeholder – please see companion files for model view graphics.

Appendix B: Product Hazard Data (PHD) Process – Operational Business Rules

Table 1: Operational Business Rules for the Product Hazard Data Process

PHD Process Operational Business Rule	Associated Process(es)
The vendor/supplier/manufacturer must provide the product hazard data as defined by the DoD, Product Hazard Data Requirement. Note: Metadata development must address the mandatory or optional categories.	Request and Review Product Hazard Data
The vendor/supplier/manufacturer must provide the product hazard data prior to sourcing/ordering of the product.	Request and Review Product Hazard Data Source/Order Material
The "hazardous process authorization" process must provide the reason(s) for rejection and recommended alternative solutions to the work unit if rejecting a requested product(s).	Identify Product(s) that Meets Requirement Conduct Hazardous Materials Process Authorization
A hazardous process authorization request must include a complete description of the unit of work as defined by the standard DoD Unit of Work template.	Complete Process Authorization Request
The hazardous process authorization must identify available non-hazardous or less-hazardous alternative product(s).	Complete Process Authorization Request
A hazardous process authorization request must identify the specific product(s) desired for use in the process.	Complete Process Authorization Request
All requisitions for hazardous products must have an approved hazardous process authorization before being sourced or ordered.	Submit Requisition Source/Order Material
Weapon systems lifecycle management must consider "Potential Opportunities for Improvement" identified as part of the Hazardous Materials Process Authorization Process.	Conduct Hazardous Materials Process Authorization
The receipt and acceptance of a hazardous product must be executed in accordance with the controls outlined in the "hazardous process authorization" approving the product.	Receive and Accept Material
The issuance of a hazardous product must be in accordance with the controls outlined in the "hazardous process authorization" approving the product.	Issue/Warehouse/Deliver Material
The disposal of a hazardous product must be in accordance with the controls outlined in the "hazardous process authorization" approving the product.	Material Return or Disposal Process [link]
The manufacturer's MSDS serial number, if available, will become part of the data retained in the Product Hazard Data Master.	Create Product Hazard Data Master
Units of work using a hazardous product must adhere to the controls set out by the "hazardous process authorization" approving the product.	Use Material
A work unit may for planning purposes conduct a product data check and subsequently request product hazard data without an immediate demand for the product.	Identify Product(s) that Meets Requirement Conduct Product Data Check Complete Process Authorization Request
All DoD users must obtain reference data from a common source file (or files) to assure maintainability and consistency.	Identify Data Source(s) Source/Obtain Reference Set Data
Waivers of a hazardous process authorization require a documented acceptance of risk by the Commanding officer or the Commander's delegated representative.	

Appendix C: Product Hazard Data (PHD) Data Elements

Data elements for product hazard data are in Tables 3a and 3b. These tables display the elements arranged into groups. The grouping is simply an aid for comprehension and has no other significance. Table 2 lists the groups in the same order as they appear in Tables 3a and 3b. If viewed in color, the Chemical Abstracts Service (CAS) groups are colored orange and all others are colored yellow. If viewed in black and white, each group name in the table beginning with *CAS:* identifies a grouping of Chemical Abstracts Service elements.

Table 2: PHD data element groups

Product Hazard Data Element Groupings
DOCUMENT INFORMATION
ORGANIZATION IDENTIFICATION
ORGANIZATION ELECTRONIC ADDRESS: CONTRACTOR
ORGANIZATION ELECTRONIC ADDRESS: MANUFACTURER
ORGANIZATION POSTAL ADDRESS: CONTRACTOR
ORGANIZATION POSTAL ADDRESS: MANUFACTURER
PRODUCT IDENTIFICATION
PRODUCT COMPONENT INFORMATION
PRODUCT USE INFORMATION
CONTAINER INFORMATION
UNIT OF ISSUE
SUBSTANCE IDENTIFICATION
CAS: SUBSTANCE IDENTIFICATION
SUBSTANCE CATEGORIZATION
CAS: SUBSTANCE CATEGORIZATION - ACGIH
CAS: SUBSTANCE CATEGORIZATION - CAA
CAS: SUBSTANCE CATEGORIZATION - CWA
CAS: SUBSTANCE CATEGORIZATION - CWCIA
CAS: SUBSTANCE CATEGORIZATION - EHS
CAS: SUBSTANCE CATEGORIZATION - EPA
CAS: SUBSTANCE CATEGORIZATION - EPCRA
CAS: SUBSTANCE CATEGORIZATION - OSHA
CAS: SUBSTANCE CATEGORIZATION - RCRA
CAS: SUBSTANCE CATEGORIZATION - SDWA
CAS: SUBSTANCE CATEGORIZATION - TRI
CAS: SUBSTANCE CATEGORIZATION - TSCA
SUBSTANCE CATEGORIZATION: RADIOACTIVE
CAS: SUBSTANCE CATEGORIZATION - RADIOACTIVE
SUBSTANCE CATEGORIZATION: LABELS
TRADE SECRET
INGREDIENT PERCENTAGE
HEALTH EFFECTS
CAS: HEALTH EFFECTS
FIRST AID
ACCIDENTAL RELEASE

Product Hazard Data Element Groupings
HAZARD IDENTICATION
CAS: HAZARD IDENTIFICATION
MATERIAL HANDLING & STORAGE
ENGINEERING CONTROLS
OBSERVABLE CHARACTERISTICS
PHYSICAL / CHEMICAL CHARACTERISTICS
CAS: PHYSICAL / CHEMICAL CHARACTERISTICS
PHYSICAL / CHEMICAL CHARACTERISTICS: TEMPERATURE THRESHOLDS
CAS: PHYSICAL / CHEMICAL CHARACTERISTICS - TEMPERATURE THRESHOLDS
PHYSICAL / CHEMICAL CHARACTERISTICS: VAPOR PRESSURE
CAS: PHYSICAL / CHEMICAL CHARACTERISTICS - VAPOR PRESSURE
PHYSICAL / CHEMICAL CHARACTERISTICS: PARTITION COEFFICIENT
PHYSICAL / CHEMICAL CHARACTERISTICS: SOLUBILITY
PHYSICAL / CHEMICAL CHARACTERISTICS: REACTIVITY
RELATIVE COMPOSITION
RELATIVE COMPOSITION: VOLATILE ORGANIC COMPOUND
STUDIES
DISPOSAL CONSIDERATIONS
EXPOSURE LIMITS
CAS: EXPOSURE LIMITS - ACGIH
CAS: EXPOSURE LIMITS - NIOSH
CAS: EXPOSURE LIMITS - OSHA
CAS: REPORTING LIMIT - CAA
CAS: REPORTING LIMIT - EHS
CAS: REPORTING LIMIT - EPCRA
CAS: REPORTING LIMIT - OSHA
CAS: REPORTING LIMIT - SDWA
CAS: REPORTING LIMIT - TRI

Within the heading row of Table 3a, the first two columns contain the data element name and its definition as determined by the joint, collaborative BPR. Columns 3 and 4 of Table 3a provide the mapping of the data element to the PHD logical data model attribute and entity. This mapping conforms to the PHD logical data model that is incorporated into the DoD business enterprise architecture, version 4.0. Columns 5 and 6 of Table 3a identify the section number and name of the appropriate American National Standards Institute (ANSI) MSDS. The "0" reference number in "#" column identifies a non-ANSI section named "Record Management." The column named "Row ID" is the row number identified in the previous versions of the data element table created in the joint, BPR working group sessions. Other than to provide a mechanism to relate this table to its earlier version, this column has no other significance.

Table 3a: PHD data elements with definitions mapped to the PHD logical data model attributes

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
DOCUMENT INFORMATION						
Document Format Name	A format in which a document may be available. Examples: Paperback book, Microsoft Word, Microsoft PowerPoint, Portable Document Format (PDF), Joint Photographic Experts Group (JPEG), Moving Picture Experts Group (MPEG), Waveform Audio Format (WAV).	DOCUMENT	Document_Type_Code; Document_Media_Format_Code	0	Record Mgmt	7
Document Version Date	The calendar date when the document was prepared or revised.	DOCUMENT	Document_Publication_Date	0	Record Mgmt	9
Document Version Number	The sequential number that tracks the history of a document versioning through the life of the document.	DOCUMENT	Document_Version_Number	0	Record Mgmt	10
Manufacturer MSDS Number	The alphanumeric code assigned by the manufacturer and listed on the manufacturer's MSDS to identify the Material Safety Data Sheet. Examples: GC-2001, 002, 299.	DOCUMENT	Document_Number	1	Product and Company Identification	60
Manufacturer MSDS Preparation Date	The calendar date of preparation of the Material Safety Data Sheet (MSDS) or last change by the legally responsible provider.	DOCUMENT	Document_Effective_Date	1	Product and Company Identification	61
Manufacturer MSDS Web Site Address Text	The URL address for the labels, Material Safety Data Sheets, and literature on the product of the business entity. Examples: http://www.dowagro.com/au/labels.htm	DOCUMENT	Document_Description_Text	1	Product and Company Identification	62
Specification Document Number	An industry or Federal identifier for a document that describes the properties of an item.	DOCUMENT	Document_Number	1	Product and Company Identification	100
Specification Type Grade Class Code	The code that stands for the type, grade, or class of a specification document.	DOCUMENT	Document_Type_Code	1	Product and Company Identification	101
ORGANIZATION IDENTIFICATION						
Manufacturer Name	The Legal Business Name of the manufacturer.	ORGANIZATION	Organization_Name	1	Product and Company Identification	63
Contractor Name	The legal business name of the company that sold the product to the government (may also be the responsible party).	ORGANIZATION	Organization_Name	0	Contract Specific	1

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Shipper Name	The legal business name of the company that is responsible for the packaging and shipping of a commodity sold to the government.	ORGANIZATION	Organization_Name	0	Contract Specific	3
Contractor CAGE Code	The code that stands for the Commercial And Government Entity Code (CAGE) assigned to the contractor. Examples: Pfizer Inc (New York, NY) = 86491, Pfizer Inc (Terre Haute, IN) = 2L330	ORGANIZATION-IDENTIFICATION	Organization_Identification_Assigned_Identifier	1	Product and Company Identification	28
Manufacturer CAGE Code	The code that stands for the Commercial And Government Entity Code (CAGE) assigned to the manufacturer of the product. Examples: Pfizer Inc (New York, NY) = 86491, Pfizer Inc (Terre Haute, IN) = 2L329	ORGANIZATION-IDENTIFICATION	Organization_Identification_Assigned_Identifier	1	Product and Company Identification	55
Responsible Party CAGE Code	The code that stands for the Commercial And Government Entity Code (CAGE) assigned to the responsible party for the product. Examples: Pfizer Inc (New York, NY) = 86491, Pfizer Inc (Terre Haute, IN) = 2L330	ORGANIZATION-IDENTIFICATION	Organization_Identification_Assigned_Identifier	1	Product and Company Identification	97
Dun and Bradstreet Number	The designator that uniquely identifies a specific business location using a nine-digit sequence of numbers. Examples: Pfizer Inc (New York, NY) = 001326495, Pfizer Inc (Terre Haute, IN) = 006059075.	ORGANIZATION-IDENTIFICATION	Organization_Unique_Identifier	1	Product and Company Identification	43
ORGANIZATION ELECTRONIC ADDRESS: CONTRACTOR						
Contractor Phone Country Code	The number that stands for the national prefix to be used when dialing to that particular country from another country. Examples: Spain = 34, Turkey = 90	TELEPHONE-ADDRESS	Telephone_Address_Full_Numeric_Identifier	1	Product and Company Identification	31.1
Contractor Emergency Contact Phone Number	The phone number including the area code that represents the commercial Telephone Address for a business entity, for obtaining emergency information.	TELEPHONE-ADDRESS	Telephone_Address_Full_Numeric_Identifier	1	Product and Company Identification	31
Contractor Phone Number	The phone number including the area code that represents the commercial Telephone Address for a business entity, mostly for obtaining general product information.	TELEPHONE-ADDRESS	Telephone_Address_Full_Numeric_Identifier	1	Product and Company Identification	34
Contractor Phone Extension Number	The additional digits assigned within an organization to an individual telephone that are dialed only after the phone system has connected to the contractor's basic phone number.	TELEPHONE-ADDRESS	Telephone_Address_Full_Numeric_Identifier	1	Product and Company Identification	33
Contractor Fax Number	The phone number including the area code that represents the Fax Address for a business entity.	TELEPHONE-ADDRESS	Telephone_Address_Full_Numeric_Identifier	1	Product and Company Identification	32
Coordinated Universal Time Zone Text	The standard time zone as indicated by the "Coordinated Universal Time" (UTC), required as a supplement to phone numbers. Examples: Istanbul = Standard time zone: UTC+2 hours; Current time zone offset: UTC+3 hours	TELEPHONE-ADDRESS	Telephone_Address_Full_Numeric_Identifier	1	Product and Company Identification	41
ORGANIZATION ELECTRONIC ADDRESS: MANUFACTURER						
Manufacturer Phone Country Code	The number that stands for the national prefix to be used when dialing to that particular country from another country. Examples: Spain = 34, Turkey = 90	TELEPHONE-ADDRESS	Telephone_Address_Full_Numeric_Identifier	1	Product and Company Identification	64
Manufacturer Emergency Contact Phone Number	The phone number including the area code that represents the commercial Telephone Address for a business entity, for obtaining emergency information.	TELEPHONE-ADDRESS	Telephone_Address_Full_Numeric_Identifier	1	Product and Company Identification	58
Manufacturer Phone Number	The number associated with a telecommunication device such as a telephone, pager, facsimile machine, or mobile telephone, including the area code, mostly for obtaining general product information.	TELEPHONE-ADDRESS	Telephone_Address_Full_Numeric_Identifier	1	Product and Company Identification	66

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Manufacturer Phone Extension Number	The additional digits assigned within an organization to an individual telephone that are dialed only after the phone system has connected to the manufacturer's basic phone number.	TELEPHONE-ADDRESS	Telephone_Address_Full_Numeric_Identifier	1	Product and Company Identification	65
Manufacturer Fax Number	The phone number including the area code that represents the Fax Address for a business entity.	TELEPHONE-ADDRESS	Telephone_Address_Full_Numeric_Identifier	1	Product and Company Identification	59
ORGANIZATION POSTAL ADDRESS: CONTRACTOR						
Contractor Street Address Line1 Text	The physical location or mailing address information of the business entity that can include property number and the name of the street or road.	ADDRESS	Address_Street_Number; Address_Street_Name; Address_Street_Direction_Code; Address_Street_Type_Code	1	Product and Company Identification	38
Contractor Street Address Line2 Text	Additional physical location or mailing address information of the business entity such as suite, room, or unit number, if required.	ADDRESS	Address_Apartment_Suite_Number	1	Product and Company Identification	39
Contractor Post Office Box Number Text	The alphanumeric identifier of a letter box at the post office where mail for the contractor is collected.	ADDRESS	Address_Post_Office_Box_Number	1	Product and Company Identification	35
Contractor City Name	The common identification or name used to identify the city in which the business entity is located or the city nearest to the asset. A city code for US locations is only unique if it is combined with a State code and a County code.	ADDRESS	City_Identifier	1	Product and Company Identification	29
Contractor State Name	The common identification or name used to identify the State, District of Columbia, or possession in which the business entity is located.	GEOPOLITICAL-SPATIAL-AREA	Geopolitical_Spatial_Area_Identifier	1	Product and Company Identification	37
Contractor Country Name	The common identification or name used to identify the country in which the business entity is located.	GEOPOLITICAL-SPATIAL-AREA	Geopolitical_Spatial_Area_Identifier	1	Product and Company Identification	30
Contractor Postal Code	Postal code of the address where the business entity is located.	ADDRESS	Postal_Zone_Identifier	1	Product and Company Identification	36
ORGANIZATION POSTAL ADDRESS: MANUFACTURER						
Manufacturer Street Address Line1 Text	The physical location or mailing address information of the business entity that can include property number and the name of the street or road.	ADDRESS	Address_Street_Number; Address_Street_Name; Address_Street_Direction_Code; Address_Street_Type_Code	1	Product and Company Identification	70
Manufacturer Street Address Line2 Text	Additional physical location or mailing address information of the business entity such as suite, room, or unit number, if required.	ADDRESS	Address_Street_Number; Address_Street_Name; Address_Street_Direction_Code; Address_Street_Type_Code	1	Product and Company Identification	71
Manufacturer Post Office Box Number Text	The alphanumeric identifier of a letter box at the post office where mail for the contractor is collected.	ADDRESS	Address_Post_Office_Box_Number	1	Product and Company Identification	67
Manufacturer City Name	The common identification or name used to identify the city in which the business entity is located or the city nearest to the asset. A city code for US locations is only unique if it is combined with a State code and a County code.	ADDRESS	City_Identifier	1	Product and Company Identification	56
Manufacturer State Name	The common identification or name used to identify the State, District of Columbia, or possession in which the business entity is located.	GEOPOLITICAL-SPATIAL-AREA	Geopolitical_Spatial_Area_Identifier	1	Product and Company Identification	69
Manufacturer Country Name	The common identification or name used to identify the country in which the business entity is located.	ADDRESS	Geopolitical_Spatial_Area_Identifier	1	Product and Company Identification	57

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Manufacturer Postal Code	Postal code of the address where the business entity is located.	ADDRESS	Postal_Zone_Identifier	1	Product and Company Identification	68
PRODUCT IDENTIFICATION						
Product Code	The alphanumeric code that was assigned by the manufacturer and is listed on the manufacturer's MSDS to uniquely identify the product.	MATERIAL-ASSET	Material_Identifier	1	Product and Company Identification	82
Product Name	The product identity or name as indicated on the MSDS. Example: Applaud Insecticide (by Dow AgroSciences).	MATERIAL	Material_Producer_Supplied_Name	1	Product and Company Identification	86
Product Part Number	The identifier assigned by the Manufacturer for identification of the product, as stated on the MSDS.	MATERIAL-MANUFACTURER	Material_Manufacture_Part_Number	1	Product and Company Identification	87
Item Name	The standard identification or short text description for a catalog or local stock item. Examples: Enamel, Adhesive.	MATERIEL-CATALOG-ITEM	Material_Catalog_Item_Description_Text	1	Product and Company Identification	49
Federal Supply Class Code	The code that stands for the classification for grouping like items, corresponding to the first four digits of a National Stock Number (NSN). Examples: 6810 for Chemicals, 8030 for sealants, 9150 for petroleum products.	ACQUISITION-ELEMENT-TYPE	Acquisition_Item_Type_Category_Code	1	Product and Company Identification	47
Federal Supply Class Text	A statement providing details about the classification for grouping like items, corresponding to the first four digits of a National Stock Number (NSN). Examples: Chemicals for 6810, Sealants for 8030, Petroleum Products for 9150.	ACQUISITION-ELEMENT-TYPE	Acquisition_Element_Type_Description_Text	1	Product and Company Identification	48
National Item Identification Number	The code that differentiates each individual supply item from all other supply items, that makes the last nine digits of a National Stock Number (NSN). The first two-digit National Codification Bureau (NCB) code ("00" or "01" indicates the United States) is followed by a seven-digit nonsignificant number.	MATERIEL-ELEMENT-TYPE	National_Stock_Number	1	Product and Company Identification	76
National Stock Number	A number used to identify an item of material in the supply distribution system of the United States. Examples: NSN for "Filter assembly, flu" is 2910 01-445-7771	MATERIEL-ELEMENT-TYPE	National_Stock_Number	1	Product and Company Identification	77
Local Item Identification Number	A locally assigned code for a product purchased by a buying activity when no NIIN is available.	MATERIEL-ASSET	Materiel_Asset_Serial_Number	1	Product and Company Identification	53
Local Stock Number	The code assigned to a product by a local buying activity, corresponding to the Federal Supply Class Code (FSC) followed by Local Item Identification Number (LIIN).	MATERIEL-ASSET	Materiel_Asset_Unique_Identifier	1	Product and Company Identification	54
PRODUCT COMPONENT INFORMATION						
Kit Parent Indicator	A designation of whether the MSN is for a kit parent record. Examples: Yes/No	OBJECT	Object_Separability_Indicator	1	Product and Company Identification	52
Kit Child Indicator	A designation of whether the item is a kit part (child). Examples: Yes/No	OBJECT-COMPONENT	Object_Component_Material_Identifier	1	Product and Company Identification	50
Kit Component Quantity	The numeric value that stands for the number of components if MSN is a kit.	OBJECT-COMPONENT	Object_Component_Distinguishing_Identifier	1	Product and Company Identification	51

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
End Item Component Indicator	A designation of whether the product is a component of an end item. Examples: Yes/No.	OBJECT-COMPONENT	Object_Component_Distinguishing_Identifier	1	Product and Company Identification	44
PRODUCT USE INFORMATION						
Product Use Type Name	The common identification or name that stands for the broad category of the product usage. Examples: Herbicide, Aerospace Sealants, etc.	MATERIAL	Material_Comments_Text	1	Product and Company Identification	93
Product Use Type Text	A statement by the manufacturer providing details about the intended use of the product. Examples: Herbicide for evergreens.	MATERIAL	Material_Comments_Text	1	Product and Company Identification	94
Product Use Permit Issuing Authority Name	Common identification or name of the regulatory authority that declared the facility has the right to possess or use a particular chemical or any chemical in a category of chemicals. For example, the Nuclear Regulatory Commission (NRC) or Agreement State will issue a permit to possess nuclear materials; the NRC will issue a permit to possess a set number of sources of a particular radioisotope; installation is issued a permit to use pesticides that require a certified applicator.	ORGANIZATION	Organization_Name	1	Product and Company Identification	321
CONTAINER INFORMATION						
Container Material Code	The code that stands for the original material of construction of the container, as packaged by the manufacturer.	OBJECT-COMPONENT	Object_Component_Material_Identifier; Material_Identifier; Substance_Identifier	1	Product and Company Identification	20
Container Material Name	The common identifier or name of the original material of construction of the container, as packaged by the manufacturer. Examples: Metal, Polyethylene, etc.	OBJECT-COMPONENT; SUBSTANCE-FAMILY	Object_Component_Material_Identifier; Material_Identifier; Substance_Identifier; Substance_Family_Name; Substance_Synonym_Text	1	Product and Company Identification	21
Container Package Type Code	The code that stands for the classification of package for a single container of the MSN. Examples: DR in a 55-GL-DR (55 Gallons per Drum).	PACKAGING TYPE	Packaging_Type_Code	1	Product and Company Identification	25
Container Package Type Name	The common identifier or name that stands for the classification of package for a single container of the MSN. Examples: Drum, Bottle, Carton, Cylinder.	PACKAGING TYPE	Packaging_Type_Name	1	Product and Company Identification	26
Aerosol Indicator	A designation of whether the item is packaged in an aerosol can. Examples: Yes/No	PACKAGING TYPE	Packaging_Type_Name	1	Product and Company Identification	12
Container Contents Net Weight	The weight of material contained in the manufacturer's container.	OBJECT-COMPONENT	Object_Component_Weight_Quantity	1	Product and Company Identification	18
Container Net Propellant Weight	The total weight of all propellant and pyrotechnic material (i.e., DoD Hazard Classification and Division 1.3) contained in a munition. Net Propellant Weight (NPW) is reported in pounds or kilograms, and excludes the weight of other components and the container.	OBJECT-COMPONENT	Object_Component_Weight_Quantity	1	Product and Company Identification	22
Container Contents Weight Unit of Measure Code	The Unit of Measure code representing the net weight of the material in a single container.	UNIT-OF-MEASURE	Unit_of_Measure_Code	1	Product and Company Identification	19

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Container Capacity Quantity	The numeric value for total net amount of material in unit measure per container in the MSN. Examples: 55 for 55-GL-DR (55 Gallons per Drum).	INSEPARABLE-OBJECT	Inseparable_Object_Maximum_Volume_Capacity _Quantity; Inseparable_Object_Maximum_Weight_Capacity_ Quantity; Inseparable_Object_Tare_Weight_ Quantity	1	Product and Company Identification	27
Container Capacity Unit of Measure Code	A unit specified by a scale that determines quantity or capacity when measuring the extent of an item. Examples: GL in a 55-GL-DR (55 Gallons per Drum).	UNIT-OF-MEASURE	Unit_of_Measure_Code	1	Product and Company Identification	23
Container Capacity Unit of Measure Name	The common identifier or name that stands for the unit specified by a scale that determines quantity or capacity when measuring the extent of an item. Examples: Each, Gallon, Dozen, Pair, Yard.	UNIT-OF-MEASURE	Unit_of_Measure_Name	1	Product and Company Identification	24
UNIT OF ISSUE						
Supply Basic Unit of Issue Code	The code that represents the minimum unit of issue for a product in the supply system. This will be the unit by which an item is to be requisitioned, received, stored, or issued. Examples: DR for Drum, BT for Bottle, CT for Carton, CY for Cylinder.	MATERIEL-CATALOG-ITEM	Materiel_Catalog_Item_Unit_Of_Issue_Code	1	Product and Company Identification	104
SUBSTANCE IDENTIFICATION						
Chemical Abstract Service Registry Number	A unique numeric identifier, assigned by the Chemical Abstract Service (CAS), designating only one substance. Examples may be: 58-08-2 for caffeine	CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM	Chemical_Abstract_Service_Registry_Item_ Number	1	Product and Company Identification	15
Chemical Abstract Service Registry Number Status Code	The code that represents the suitability of use of the Chemical Abstract Service Registry Number (CAS). Examples: DR for Deleted Registry Number, AR for Alternate Registry Number, and PR for Preferred Registry Number.	CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM	Chemical_Abstract_Service_Registry_Item_ Assignment_Status_Code	2	Composition/Information on Ingredients	109
Environmental Protection Agency Registry Chemical Substance Number	The unique five-digit number assigned by the Environmental Protection Agency (EPA) to each chemical substance in the Toxic Substance Control Act (TSCA) inventory. Examples: 18543 for Monosubstituted methane resin, maleic anhydride polymer ester with pentaerythritol.	SUBSTANCE-SYNONYM	Substance_Identifying_Term_Promulgation_Type _Name	1	Product and Company Identification	46
Environmental Protection Agency Registry Chemical Substance Name	The common identification or name that the Environmental Protection Agency (EPA) has selected as its preferred name for a chemical substance in the Toxic Substance Control Act (TSCA) inventory. Examples: 18543 for Monosubstituted methane resin, maleic anhydride polymer ester with pentaerythritol.	SUBSTANCE-SYNONYM	Substance_Identifying_Term_Promulgation_Type _Name	1	Product and Company Identification	45
Chemical Family Name	The text designation for a class or grouping of chemicals that share a generic identity or a more general classification. For example, aromatic, cycloaliphatic, and heterocyclic epoxies can be grouped together as epoxy resins.	SUBSTANCE-FAMILY	Substance_Family_Name	1	Product and Company Identification	16
Ingredient Name	The text designation for a chemical contained in the MSDS product and was provided by the manufacturer as defined by OSHA HazCom Standard 29 CFR 910.1200 as present in the product at a concentration of 1 percent by weight, or 0.1 percent by weight for OSHA defined carcinogens.	INGREDIENT	Ingredient_Contained_Substance_Identifier	2	Composition/Information on Ingredients	111

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Chemical Formulation Version Number	A code which is used to differentiate among multiple formulations of a particular product identity.	MATERIAL-LOT; MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD	Material_Lot_Identifier; Material_Catalog_Item_Material_Period_Start_Date	1	Product and Company Identification	17
Chemical Formulation Version Text	A statement providing details about the type of change that the manufacturer has made to the product formulation. This may refer either to the product formulation described on the current MSDS, or the Lot or Batch produced under an MSDS.	MATERIAL-LOT; MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD	Material_Lot_Identifier; Material_Catalog_Item_Material_Period_Start_Date	3	Product and Company Identification	124
Chemical Formulation Version Start Date	The calendar date the "Chemical Formula Version" was changed by the manufacturer.	MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD	Materiel_Catalog_Item_Material_Period_Start_Date	2	Product and Company Identification	122
Lot Batch Identification Text	A common identification or code used to differentiate between amounts of a product, within which a definite quantity of an item is accumulated under conditions that are considered uniform for sampling purposes.	MATERIAL-LOT; MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD	Material_Lot_Identifier; Material_Catalog_Item_Material_Period_Start_Date	3	Product and Company Identification	124.1
CAS: SUBSTANCE IDENTIFICATION						
Chemical Name	Text designation for the name of an element, a chemical, or a compound that has physical and chemical properties, which may or may not have a CAS number.	SUBSTANCE-SYNONYM	Substance_Synonym_Text	20	CAS Data	343
Chemical Name Synonym	Alternate names used by various vendors, regulations, and countries to represent the identity of a chemical substance.	SUBSTANCE-SYNONYM	Substance_Synonym_Text	20	CAS Data	344
Chemical Registry Name Source Text	The source of the Environmental Protection Agency chemical registry name. For example: "Hazardous Substances Data Bank"	ORGANIZATION-SUBSTANCE-SYNONYM, REGULATION-SUBSTANCE-SYNONYM	Substance_Synonym_Promulgating_Organization_Identifier; Substance_Synonym_Promulgating_Regulation_Identifier	20	CAS Data	345
Regulatory Program for Synonym Name	Text designation for an EPA regulatory program that requires specific names to be used to identify chemicals under some regulatory reporting requirements. For example, some chemicals must be reported under one name for EPCRA section 303, but under a different name for EPCRA section 313. Examples: CWA - Water Quality Standards, CWA - TMDL, SDWA, EHS, etc.	REGULATION-REQUIREMENT	Regulation_Requirement_Description_Text	20	CAS Data	397
Chemical Systematic Name	Text designation for a chemical based on the nomenclature system of the International Union of Pure and Applied Chemistry (IUPAC), the Chemical Abstracts Service (CAS) rules of nomenclature, or other naming convention which will clearly identify the chemical. Examples: 2-Butanone (for EPA Registry Name = Methyl ethyl ketone and CAS Registry Number = 78-93-3); 2-Pentanone, 4-methyl- (for EPA Registry Name = Methyl isobutyl ketone and CAS Registry Number = 108-10-1)	SUBSTANCE-SYNONYM	Substance_Synonym_Text	20	CAS Data	348
Chemical Abstract Service Registry Number	A numeric code assigned by the Chemical Abstract Service (CAS) to a chemical or substance.	CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM	Chemical_Abstract_Service_Registry_Item_Number	20	CAS Data	340

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Chemical Category Name	Text designation for a grouping of chemicals that have a combined limit (e.g., regulatory, exposure) that applies to the total amount of all category members. Example: "Arsenic and compounds" has a 0.1 mg/m3 Occupational Exposure Limit (set under the OSHA Hazardous Chemical Substances Regulations of 1995). This OEL would apply to the combined total weights of arsenic oxide, arsenic hydride, and arsenic sulphide.	SUBSTANCE-FAMILY	Substance_Family_Name	20	CAS Data	341
Chemical Structural Family Name	Text designation for a grouping of chemical substances that share certain characteristics and have a common name. Examples: alkaline earth metals, rare gases, carboxylic acids, ketones.	SUBSTANCE-FAMILY	Substance_Family_Name	20	CAS Data	346
Chemical Substance Classification Name	Text designation for an EPA-assigned classification or grouping of materials with similar uses. Example: aromatic, cycloaliphatic, and heterocyclic epoxies can be grouped together as "Epoxy resins".	SUBSTANCE-FAMILY	Substance_Family_Name	20	CAS Data	347
RTECS Number	A unique 9-position alphanumeric identifier (two letters, followed by seven numbers) issued by the National Institute for Occupational Safety and Health (NIOSH) to chemicals in its Registry of Toxic Effects of Chemical Substances (RTECS) database of toxic chemical information. Example: AB6825000 for Chloramphenicol	SUBSTANCE-SYNONYM	Substance_Synonym_Text	20	CAS Data	398
Environmental Protection Agency Internal Chemical Registry Identifier	Environmental Protection Agency's (EPA) internal unique 9-character alphanumeric identifier that is used in EPA's Chemical Registry database for a chemical substance or chemical grouping that does not have a CAS number.	SUBSTANCE-SYNONYM	Substance_Synonym_Text	20	CAS Data	356
Environmental Protection Agency Internal Chemical Registry Name	Environmental Protection Agency's (EPA) selected name for internal reference to the chemical.	SUBSTANCE-SYNONYM	Substance_Synonym_Text	20	CAS Data	357
Radioactive Isotope Name	The common identification or name that stands for a radioactive isotope. Examples: Uranium, Helium, Carbon.	SUBSTANCE-SYNONYM	Substance_Synonym_Text	20	CAS Data	318
Radioactive Isotope Symbol	An elemental abbreviation of neutrons plus protons for a radioactive isotope.	RADIOISOTOPE	Substance_Synonym_Text; Substance_Synonym_Image	20	CAS Data	319
SUBSTANCE CATEGORIZATION						
Product Hazardous Form Type Text	A code that identifies the product (as received) in one of three physical conditions that could cause it to be more dispersible or hazardous. The three hazardous forms of concern are: powder with particle size less than 100 microns; in solution; and molten.	MATERIAL	Material_Hazards_Emergency_Overview_Text	1	Product and Company Identification	83
Defense Reserve Ozone Depleting Substance Indicator	A designation of whether the item contains an Ozone Depleting Substance (ODS) that must be turned in or requisitioned through the Defense Reserve. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT	Regulation _Identifier; Substance_Identifier	1	Product and Company Identification	42
Ingredient EPCRA Hazardous Indicator	A designation of whether an ingredient is listed on the MSDS as hazardous under EPCRA by the Manufacturer. Examples: Yes/No.	INGREDIENT	Ingredient_Considered_EPCRA_Hazardous_ Identifier	2	Composition/Information on Ingredients	110
CAS: SUBSTANCE CATEGORIZATION - ACGIH						

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
ACGIH TLV Skin Eye Absorption Indicator	A designation of whether the chemical is considered by the American Conference of Governmental Industrial Hygienists' (ACGIH) for worker exposure to enter the body to cause toxic effects through intact skin, mucous membranes, and eyes. Examples: S for Skin/Eye, or N for Neither	SUBSTANCE-EXPOSURE-LIMIT-TYPE	Substance_Exposure_Limit_Type_Skin_Indicator	20	CAS Data	326
CAS: SUBSTANCE CATEGORIZATION - CAA						
CAA Hazardous Air Pollutant Compound Indicator	A designation of whether the chemical is a member of a group of substances designated as a compound, which is listed as a Hazardous Air Pollutant (HAP) under the Clean Air Act. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	328
CAA Hazardous Air Pollutant Compound Name	The name of a group of substances designated as a compound, which is listed as a Hazardous Air Pollutant (HAP) under Clean Air Act (CAA). Examples: Lead Compound, Fine Mineral Fibers.	SUBSTANCE-FAMILY-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY	Substance_Family_Identifier; Substance_Family_Name	20	CAS Data	328.1
CAA Hazardous Air Pollutant Indicator	A designation of whether the substance is one of the chemicals (e.g., benzene, 71-43-2), compounds (e.g., chromium compounds), or groupings (mineral fibers) that are regulated as a Hazardous Air Pollutants (HAPs) under Section 112 of the Clean Air Act. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	329
CAA Hazardous Air Pollutant Inorganic Indicator	A designation of whether the chemical substance or category (e.g., antimony compounds) is within one of the inorganic pollutant categories that are regulated as a Hazardous Air Pollutants (HAPs) under the Clean Air Act. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	330
CAA Hazardous Air Pollutant Organic Indicator	A designation of whether the substance or category (e.g., coke oven emissions) is one of the organic aggregate Hazardous Air Pollutants (HAPs) chemicals listed in EPA guidance that must be aggregated into the "polycyclic organic matter (POM)" category for thresholds and reporting under the Clean Air Act, section 112(b). These chemicals are primarily products of incomplete combustion, and include fluorene and benzo(ghi)perylene. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	331
CAA Risk Management Plan Flammable Indicator	A designation of whether the substance is regulated as flammable under the Risk Management Plan (RMP) requirements of Section 112(r) of the Clean Air Act (CAA) (40 CFR Sec 68.130, Table I.). Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	332

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
CAA Risk Management Plan Toxic Indicator	A designation of whether the substance is regulated as toxic under the Risk Management Plan (RMP) requirements of Section 112(r) of the Clean Air Act (CAA) (40 CFR Sec 68.130, Table I.). Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	333
Ozone Depleting Substance Class I Indicator	A designation of whether the chemical substance or category (e.g., dibromofluoroethanes) is listed as a Class I Ozone Depleting Substance (ODS) as defined by the Clean Air Act (CAA). Title VI, Sec 602. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	391
Ozone Depleting Substance Class II Indicator	A designation of whether the chemical or category is listed as a Class II Ozone Depleting Substance (ODS) as defined by the Clean Air Act (CAA). Title VI, Sec 602. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	392
Volatile Organic Chemical Indicator	A designation of whether the chemical is a Volatile Organic Chemical (VOC) regulated under the Clean Air Act (CAA)(40 CFR 51). Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation _Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	421
CAS: SUBSTANCE CATEGORIZATION - CWA						
CWA Priority Pollutant Indicator	A designation of whether the substance is regulated under Section 304(b) as priority pollutants for the development of ambient water quality criteria and effluent limitation guidelines under the Clean Water Act (CWA) (USC 1251, et seq; 40 CFR 413.02), as listed in 40 CFR 423, Appendix A. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	349
CAS: SUBSTANCE CATEGORIZATION - CWCIA						
CWCIA Regulated Substance Schedule	A designator that defines the substance as a toxic chemical or precursor (e.g., any chemical reactant involved at any stage in the production) that is regulated under the Chemical Weapons Convention Implementation Act (CWCIA) of 1998 (22 USC 6701; 15 CFR Parts 710 to 722), as specified in the Annex on Chemicals. Examples: Schedule 1, Schedule 2, Schedule 3, Unscheduled Discrete Organic Chemicals.	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	350
CAS: SUBSTANCE CATEGORIZATION - EHS						

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Extremely Hazardous Substance Indicator	A code that indicates the chemical is listed as an Extremely Hazardous Substance (EHS) under EPCRA, as specified in 40 CFR Part 355, Appendices A and B. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	367
FIFRA Regulated Substance Indicator	A designation of whether the substance is regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 U.S.C. 136-136y; 40 CFR 152-180). Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	368
CAS: SUBSTANCE CATEGORIZATION - EPA						
Volatile Organic Chemical Exempt Indicator	A designation of whether the chemical is on the list of exempt Volatile Organic Chemicals (VOC) at 40 CFR. 51.100(s), which EPA specifically exempted from being regulated as VOCs. Example: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation _Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	420
CAS: SUBSTANCE CATEGORIZATION - EPCRA						
EPCRA 311/312 Acute Health Hazard Indicator	A designation of whether the EPCRA section 311/312 acute (immediate) health hazard category (40 CFR Part 370) applies, based on the OSHA immediate health hazard types that may appear on the vendor's MSDS. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	358
EPCRA 311/312 Chronic Health Hazard Indicator	A designation of whether the EPCRA section 311/312 chronic health hazard category (40 CFR Part 370) applies, based on the OSHA immediate health hazard types that may appear on the vendor's MSDS. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	359
EPCRA 311/312 Reactive Hazard Indicator	A designation of whether the EPCRA section 311/312 reactive hazard category (40 CFR Part 370) applies, based on the OSHA immediate health hazard types that may appear on the vendor's MSDS. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	363
EPCRA 311/312 Fire Hazard Indicator	A designation of whether the EPCRA section 311/312 fire hazard category (40 CFR Part 370) applies, based on the OSHA immediate health hazard types that may appear on the vendor's MSDS. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	360

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
EPCRA 311/312 Sudden Release of Pressure Hazard Indicator	A designation of whether the EPCRA section 311/312 sudden release of pressure hazard category (40 CFR Part 370) applies, based on the OSHA immediate health hazard types that may appear on the vendor's MSDS. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	364
Persistent Bioaccumulative and Toxic Chemical Indicator	A designation of whether the chemical is a Persistent Bioaccumulative and Toxic (PBT) chemical as listed by EPA under EPCRA Section 313. Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	393
CAS: SUBSTANCE CATEGORIZATION - OSHA						
OSHA PEL Skin Eye Absorption Indicator	A designation of whether the chemical is considered by OSHA Permissible Exposure Limit (PEL) (Ref: 29 CFR 1910.1000, Table Z-1) for worker exposure to enter the body to cause toxic effects through intact skin, mucous membranes, and eyes. Examples: S for Skin/Eye, or N for Neither	SUBSTANCE-EXPOSURE-LIMIT-TYPE	Substance_Exposure_Limit_Type_Skin_Indicator	20	CAS Data	381
CAS: SUBSTANCE CATEGORIZATION - RCRA						
RCRA Hazardous Waste Code	Alphanumeric code(s) assigned to a hazardous waste under the Resource Conservation and Recovery Act (RCRA). Examples include: U019 for Benzene; P051 for Endrin, P030 for Cyanides (soluble cyanide salts), not otherwise specified.	SUBSTANCE-REGULATION-REQUIREMENT	Regulated_Substance_Reporting_Code	20	CAS Data	396
CAS: SUBSTANCE CATEGORIZATION - SDWA						
SDWA Primary Drinking Water Standard Substance Indicator	A designation of whether the chemical substance or category (e.g., aldehydes) is regulated under the National Primary Drinking Water Standards, and has a Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act (SDWA) of 1996 (40 CFR Part 141). Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	402
VOC Safe Drinking Water Act Indicator	A code that indicates the chemical is on a list of Volatile Organic Chemicals (VOC), including "xylenes (total)" that are regulated under the Safe Drinking Water Act (SDWA) (40 CFR 141.24) and listed in Appendix A of 40 CFR Part 141). Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation _Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	418
CAS: SUBSTANCE CATEGORIZATION - TRI						
TRI Chemical Indicator	A code that indicates the chemical is listed as a Toxic Chemical under Section 313 of EPCRA (40 CFR Part 372). Category level is needed for categories that are listed with CAS numbers (e.g., PCBs) Examples: Yes/No	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	410

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
TRI Chemical Category Code	A code applied to the Toxic Chemical Category as listed under Section 313 of the EPCRA (40 CFR Part 372). Examples: N090 for Chromium Compounds; N150 for Dioxin and Dioxin-Like Compounds.	SUBSTANCE-FAMILY-REGULATION-REQUIREMENT	Substance_Family_Regulation_Requirement_Reporting_Code	20	CAS Data	408
TRI Chemical Category Name	The common identification or name used for the Toxic Chemical category as listed under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (40 CFR Part 372). Examples: Chromium Compounds for N090; Dioxin and Dioxin-Like Compounds for N150.	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation_Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	409
CAS: SUBSTANCE CATEGORIZATION - TSCA						
Ingredient Export Notification Requirement Flag	The code that indicates whether the material contains a chemical which requires export notification under Toxic Substance Control Act (TSCA) Section 12[b].	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulation _Identifier; Substance_Identifier; Substance_Family_Identifier	20	CAS Data	302
TSCA Regulated Substance Section Code	A code that indicates the section the substance is regulated under the Toxic Substances Control Act (TSCA) (15 U.S.C. 2601 et seq. (1976); 40 CFR 700-789), based on MSDS information. Examples: E for Subject to TSCA Section 5(e) Consent Order; F for Subject to TSCA Section 5(f); N for Polymer made with a free radical but whose inventory name contains no free-radical indicator and regardless of the amount used; P for Subject to TSCA premanufacture notice; R for Subject to TSCA Section 6 risk management rule; S for Identified in a proposed or final SNUR (Significant New Use Rule); T for Subject to TSCA Section 4 test rule; XU for Exempt from Inventory Update Rule reporting; Y1 for Exempt polymer with number-average molecular weight of 1,000 or greater; Y2 for Exempt polyester polymer made from low concern reactants specified in the exemption eligibility criteria rule.	SUBSTANCE-REGULATION-REQUIREMENT; SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Regulated_Substance_Reported_Code; Substance_Family_Identifier	20	CAS Data	413
TSCA Regulated Substance Section Description	A statement providing details about the section the substance is regulated under the Toxic Substances Control Act (TSCA) (15 U.S.C. 2601 et seq. (1976); 40 CFR 700-789), based on MSDS information. Examples: Subject to TSCA Section 5(e) Consent Order (for E); Subject to TSCA Section 5(f) (for F); Polymer made with a free radical but whose inventory name contains no free-radical indicator and regardless of the amount used (for N).	REGULATION-REQUIREMENT	Regulation_Requirement_Description_Text	20	CAS Data	413.1
SUBSTANCE CATEGORIZATION: RADIOACTIVE						
Radioactive Indicator	A designation of whether the item is radioactive or contains one or more radioactive components. Examples: Yes/No.	ISOTOPE	Isotope_Radioactive_Indicator	1	Product and Company Identification	95
Radioisotope Indicator	A designation of whether the component is a Radioisotope. Examples: Yes/No.	ISOTOPE	Isotope_Radioactive_Indicator	2	Composition/Information on Ingredients	11
Radioactive Activity Quantity	The specific activity or rate of decay for the radioactive source. Measured in becquerel (Bq) or curies (Ci).	RADIOISOTOPE-DECAY-EMISSION	Substance_Radioactive_Decay_Rate	17	Other	320.1

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Radioactive Activity Unit of Measure Code	The common identifier or name for the unit of quantity or number of decay events per gram of a radioactive source. Will be either becquerel (Bq) or curies (Ci).	UNIT-OF-MEASURE	Unit_of_Measure_Code	17	Other	320.2
Radioactive Item Type Name	The common name or identifier used to describe the type of equipment or part of an item that is radioactive or contains one or more radioactive components. Example: Lantirn Pod for F-16 aircraft is an end item that contains two radioactive sources in different components or types of items.	MATERIAL; ISOTOPE	Material_Type_Name; Material_Producer_Supplied_Name	17	Other	317
CAS: SUBSTANCE CATEGORIZATION - RADIOACTIVE						
Radioactive Material Form Type	A code or short name that denotes whether the radioactive material is in a normal or special form as defined in 49 CFR 173.403 and the material state (solid, liquid, gas).	ISOTOPE	Isotope_Radioactive_Indicator	20	CAS Data	320
SUBSTANCE CATEGORIZATION: LABELS						
Pictograph ISO Identifier	The reference number that distinguishes one graphical symbol from another, as assigned jointly by the ISO (International Organization for Standardization), IEC (International Electrotechnical Commission), and Globally Harmonized Hazard Communication Standard.	HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Hazardous_Material_Classification_System_Name; Hazardous_Material_Classification_System_Version_Start_Date; Hazardous_Material_Classification_System_Pictogram_Distinguishing_Identifier	16	Other Information	314
Pictograph ISO Title	The common identification or name of the graphical symbol, as assigned jointly by the ISO (International Organization for Standardization), IEC (International Electrotechnical Commission), and Globally Harmonized Hazard Communication Standard.	HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Hazardous_Material_Classification_System_Pictogram_Name	16	Other Information	315
Signal Word Text	The common identification or name on the label that alerts the user of a potential hazard. Examples: CAUTION, WARNING, DANGER, or NONE.	SIGNAL-WORD	Signal_Word_Name	16	Other Information	316
TRADE SECRET						
MSDS Trade Secret Indicator	A designation of whether the Material Safety Data Sheet contains information that the Manufacturer has chosen to protect as proprietary. Examples: Yes/No.	TRADE-SECRET	Trade_Secret_Number	1	Product and Company Identification	74
Ingredient Trade Secret Indicator	A designation of whether the manufacturer is protecting the identity of this chemical substance, or the amount of the substance in the mixture as a Trade Secret. Examples: Yes/No.	INGREDIENT-TRADE-SECRET	Ingredient_Contained_Substance_Identifier; Trade_Secret_Number	2	Composition/Information on Ingredients	115
Ingredient Trade Secret Additional Name	An additional identification on the ingredient name provided by the Manufacturer to identify the chemical substance's identity in a particular Material.	INGREDIENT-TRADE-SECRET-SUBSTANCE-NAME	Substance_Identifying_Term_Identifier	2	Composition/Information on Ingredients	114
INGREDIENT PERCENTAGE						
Percent Volume Quantity	The number that indicates the percentage with respect to volume, corresponding to the Percent Volume Type.	INGREDIENT-PERCENTAGE	Ingredient_Percentage_Quantity; Ingredient_Measurement_Percentage_Type_Name	2	Composition/Information on Ingredients	116
Percent Volume Source Text	The description that identifies the means or method and the organization or entity that provided the information on chemical percentage to volume for the material.	ORGANIZATION	Organization_Name	2	Composition/Information on Ingredients	117
Percent Volume Type Text	The common description that identifies the percentage type with respect to volume. Examples: Percent Equal to Volume, Percent Less Than Volume, Percent Greater Than Volume, Percent Low Range Volume, and Percent High Range Volume.	INGREDIENT-PERCENTAGE	Ingredient_Percentage_Type_Name	2	Composition/Information on Ingredients	118

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Percent Weight Quantity	The number that indicates the percentage with respect to weight, corresponding to the Percent Weight Type.	INGREDIENT-PERCENTAGE	Ingredient_Percentage_Quantity; Ingredient_Measurement_Percentage_Type_Name	2	Composition/Information on Ingredients	119
Percent Weight Source Text	The description that identifies the means or method and the organization or entity that provided the information on chemical percentage to weight for the material.	ORGANIZATION	Organization_Name	2	Composition/Information on Ingredients	120
Percent Weight Type Text	The common description that identifies the percentage type with respect to weight. Examples: Percent Equal to Weight, Percent Less Than Weight, Percent Greater Than Weight, Percent Low Range Weight, and Percent High Range Weight.	INGREDIENT-PERCENTAGE	Ingredient_Percentage_Type_Name	2	Composition/Information on Ingredients	121
Ingredient Non Numerical Percent Text	The text that describes the manufacturer's non-numerical percentage of an ingredient. Examples: Trace, To balance, etc.	INGREDIENT	Ingredient_Non_Numerical_Percent_Text	2	Composition/Information on Ingredients	112
Ingredient Quantity for Non Numerical Percent Calculation Quantity	The numeric value that accounts for the manufacturer's non-numerical percentage of an ingredient in a specific material formulation.	INGREDIENT	Ingredient_Non_Numerical_Percent_Calculation_Text	2	Composition/Information on Ingredients	113
HEALTH EFFECTS						
Health Effects Comment Text	A statement providing details or additional information by the manufacturer on the potential health effects of a product.	ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Details_Text	3.3	Hazard Identification	131
Health Hazard Acute and Chronic Text	A statement providing details about the health hazards, either acute or chronic, that may be associated with the product.	ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Summary_Text	3.3	Hazard Identification	132
Conditions Aggravated by Exposure Text	A statement providing details about the medical conditions aggravated by exposure or over exposure to the product.	ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Details_Text	3.3	Hazard Identification	130
Signs and Symptoms Text	A statement providing details about the signs and symptoms of overexposure to the product.	SIGN-SYMPTOM	Sign_Symptom_Summary_Text	3.3	Hazard Identification	133
Target Organ Name	The common identification or name that stands for the bodily organ(s) that are most likely to be affected by exposure to the chemical. Examples: Kidney, Liver, etc.	ADVERSE-HEALTH-EFFECT-TARGET-BODY-PART	Target_Body_Part_Name	3.3	Hazard Identification	134
Carcinogen Type Code	The code that represents the carcinogen type of the chemical. Examples: A1 - Confirmed Human Carcinogen; A2 - Suspected Human Carcinogen; A3 - Animal Carcinogen; A4 - Not Classifiable as Human Carcinogen; A5 - Not Suspected as Human Carcinogen.	SUBSTANCE-ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Name	3.3	Hazard Identification	127
Carcinogen Type Text	A statement providing details about the carcinogen type of the chemical. Examples: A1 - Confirmed Human Carcinogen; A2 - Suspected Human Carcinogen; A3 - Animal Carcinogen; A4 - Not Classifiable as Human Carcinogen; A5 - Not Suspected as Human Carcinogen.	SUBSTANCE-ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Details_Text; Adverse_Health_Effect_Summary_Text; Adverse_Health_Effect_Name_Text	3.3	Hazard Identification	129
Carcinogen Description Text	A statement providing details about the ability of the chemical to produce cancer.	SUBSTANCE-ADVERSE-HEALTH-EFFECT	Substance_Adverse_Health_Effect_Details_Text; Substance_Adverse_Health_Effect_Summary_Text; Substance_Adverse_Health_Effect_Name_Text	3.3	Hazard Identification	125
Carcinogen Listing Entity Name	The common identification or name that stands for the organization entity that classified the chemical as a carcinogen or potential carcinogen. Examples: International Agency for Research (IARC), National Toxicology Program (NTP), Occupational Safety and Health Administration (OSHA), and American Council of Government Industrial Hygienist (ACGIH).	ORGANIZATION	Organization_Name	3.3	Hazard Identification	126

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Toxicological Text	A statement providing details about the toxicity testing of material and/or its components.	ADVERSE-HEALTH-EFFECT; SUBSTANCE-ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Type_Name; Adverse_Health_Effect_Summary_Text; Adverse_Health_Effect_Details_Text Substance_Adverse_Health_Effect_Details_Text; Substance_Adverse_Health_Effect_Name Substance_Adverse_Health_Effect_Summary_ Text	11	Toxicological	230
Mutagenic Effects Text	A statement providing details about the mutation effects of the chemical on chromosomes and genes (Genetic Effects).	ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Type_Name; Adverse_Health_Effect_Summary_Text; Adverse_Health_Effect_Details_Text	11	Toxicological	226
Neurotoxic Effects Text	A statement providing details about the effects of the chemical on the neural system.	ADVERSE-HEALTH-EFFECT; SUBSTANCE-ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Type_Name; Adverse_Health_Effect_Summary_Text; Adverse_Health_Effect_Details_Text; Substance_Adverse_Health_Effect_Details_Text; Substance_Adverse_Health_Effect_Name; Substance_Adverse_Health_Effect_Summary_ Text	11	Toxicological	227
Reproductive Effects Text	A statement providing details about the effects of the chemical on the reproductive system including studies conducted on the subject.	ADVERSE-HEALTH-EFFECT; SUBSTANCE-ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Type_Name; Adverse_Health_Effect_Summary_Text; Adverse_Health_Effect_Details_Text; Substance_Adverse_Health_Effect_Details_Text; Substance_Adverse_Health_Effect_Name; Substance_Adverse_Health_Effect_Summary_ Text	11	Toxicological	228
Teratogenic Effects Text	A statement providing details about the effects of the chemical to the unborn fetus (Birth Defects) including studies conducted on the subject.	ADVERSE-HEALTH-EFFECT; SUBSTANCE-ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Type_Name; Adverse_Health_Effect_Summary_Text; Adverse_Health_Effect_Details_Text; Substance_Adverse_Health_Effect_Details_Text; Substance_Adverse_Health_Effect_Name; Substance_Adverse_Health_Effect_Summary_ Text	11	Toxicological	229
CAS: HEALTH EFFECTS						
Target Organ Name	The common identification or name that stands for the bodily organ(s) that are most likely to be affected by exposure to the chemical. Examples: Kidney, Liver, etc.	SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART	Body_Part_Name	20	CAS Data	405
Primary Routes of Exposure Text	The common identification or name that stands for the primary routes of exposure to a chemical substance. Examples: inhalation, skin/eye, and ingestion.	SUBSTANCE-ROUTE-OF-EXPOSURE	Route_Of_Exposure_Name	20	CAS Data	395
Symptoms of Exposure Text	A statement providing details about the signs and symptoms of [target organ] effects which may have been caused by a chemical substance. Examples: Nausea, Vomiting, Loss of consciousness.	SIGN-SYMPTOM	Sign_Symptom_Summary_Text; Sign_Symptom_Details_Text; Sign_Symptom_Name	20	CAS Data	404
Carcinogen Description Text	A statement providing details about the ability of the chemical to produce cancer.	SUBSTANCE-ADVERSE-HEALTH-EFFECT	Substance_Adverse_Health_Effect_Details_Text; Substance_Adverse_Health_Effect_Names_Text; Substance_Adverse_Health_Effect_Summary_ Text	20	CAS Data	335

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Carcinogen Designation Entity Code	Code or short name for the organization that classified the chemical as a carcinogen or potential carcinogen. Up to four organizations may have declared a single chemical to be a carcinogen. Examples: IARC for International Agency for Research, NTP for National Toxicology Program.	SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Substance_Adverse_Health_Effect_Determination_Organization_Identifier	20	CAS Data	336
Carcinogen Designation Entity Name	The common identification or name for the organization that classified the chemical as a carcinogen or potential carcinogen. The organizations recognized by OSHA are as follows: International Agency for Research (IARC) Monographs, National Toxicology Program (NTP), Occupational Safety and Health Administration (OSHA) 29 CFR part 1910, subpart Z, and American Council of Government Industrial Hygienist (ACGIH).	ORGANIZATION	Organization_Name	20	CAS Data	337
Carcinogen Promulgation Date	The calendar date when the chemical was formally proclaimed as a carcinogen by an organization.	SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Substance_Adverse_Health_Effect_Start_Date	20	CAS Data	338
Mutagenic Effects Text	A statement providing details about the mutation effects that the chemical may have by increasing the rate of change in chromosomes and genes.	SUBSTANCE-SIGN-SYMPTOM	Substance_Sign_Symptom_Summary_Text Substance_Sign_Symptom_Details_Text	20	CAS Data	373
Mutagenic Effects Source Entity Name	The common identification or name for the organization that provided the statement on mutagenic effects of the chemical.	ORGANIZATION	Organization_Name	20	CAS Data	373.1
Neurotoxic Effects Text	A statement providing details about the neurotoxic effects that the chemical may have that inhibits, damages or destroys nerves and tissues in the central nervous system.	SUBSTANCE-ADVERSE-HEALTH-EFFECT	Substance_Adverse_Health_Effect_Details_Text; Substance_Adverse_Health_Effect_Details_Text	20	CAS Data	374
Neurotoxic Effects Source Entity Name	The common identification or name for the organization that provided the statement on neurotoxic effects of the chemical.	ORGANIZATION	Organization_Name	20	CAS Data	374.1
Teratogenic Effects Text	A statement providing details about the malformation effects that the chemical may have on an embryo or fetus.	SUBSTANCE-ADVERSE-HEALTH-EFFECT	Substance_Adverse_Health_Effect_Details_Text; Substance_Adverse_Health_Effect_Name; Substance_Adverse_Health_Effect_Summary_Text	20	CAS Data	407
Teratogenic Effects Source Entity Name	The common identification or name for the organization that provided the statement on teratogenic effects of the chemical.	ORGANIZATION	Organization_Name	20	CAS Data	407.1
Incompatible Chemical Name	The common identification or chemical name (as listed on the MSDS) of an incompatible chemical(s) or material that when mixed or used with this substance can produce an undesired chemical reaction that can produce an imminent threat to health and safety through an explosion, fire, and/or formation of toxic materials.	SUBSTANCE-INCOMPATABLE-SUBSTANCE-FAMILY; SUBSTANCE-INCOMPATABLE-SUBSTANCE	Substance_Identifier; Substance_Family_Identifier; Substance_Incompatable_Substance_First_Substance_Identifier; Substance_Incompatable_Substance_Second_Substance_Identifier	20	CAS Data	370
RTECS Toxic Effects Code	An alphanumeric code assigned by the National Institute for Occupational Safety and Health (NIOSH) to summarize data in the Registry of Toxic Effects of Chemical Substances (RTECS) system and identify the health effects of toxic chemicals. Example: Code "L60" uses "L" to refer to "Liver", and "60" for "Tumors".	SUBSTANCE-REGULATION-REQUIREMENT	Regulated_Substance_Reporting_Code	20	CAS Data	399
FIRST AID						
First Aid Pictogram Name	The common identification or name that stands for a pictogram that captures a potential health or safety risk. Examples include: E - Explosive; F - Flammable; O - Oxidizing Agent; Xn - Harmful Substance, etc.	FIRST-AID-MEASURE	First_Aid_Measure_Predefined_Indicator	4.1	First Aid Measures	135

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
First Aid Procedure Text	A statement providing details about the first aid procedures to be used in the event of inhalation, skin and eye contact, and ingestion of the product.	FIRST-AID-MEASURE	First_Aid_Measure_Summary_Text; First_Aid_Measure_Details_Text	4.1	First Aid Measures	136
Note to Physician Text	A statement providing details about the specific information to health care professionals.	NOTE-TO-PHYSICIAN	Note_To_Physician_Details_Text	4.2	First Aid Measures	137
ACCIDENTAL RELEASE						
Neutralizing Agent Text	A statement providing details about the substance(s) used to neutralize a strong acid or base (alkaline), also identifying prohibited substances.	ACCIDENTAL-RELEASE-MEASURE	Accidental_Release_Measure_Summary_Text; Accidental_Release_Measure_Details_Text	6.3	Accidental Release Measures	154
Accidental Release Measures Text	A statement providing details about the measures taken for responding, containing, and minimizing the spread of a release of hazardous materials.	ACCIDENTAL-RELEASE-MEASURE	Accidental_Release_Measure_Summary_Text; Accidental_Release_Measure_Details_Text	6.4	Accidental Release Measures	155
HAZARD IDENTICATION						
Hazard Characteristic Code	The code that stands for the general classification of Hazardous Materials based on their primary hazard characteristic. Examples: A1 for Radioactive, licensed; C3 for Acid, Low Risk; and F3 for Flammable Solid.	HAZARD-CATEGORY	Hazard_Category_Code	7.2	Handling and Storage	159
Hazard Characteristic Name	The common identification or name that stands for the general classification of Hazardous Materials based on their primary hazard characteristic. Examples: Radioactive, licensed; Acid, Low Risk; and Flammable Solid.	HAZARD-CATEGORY	Hazard_Category_Short_Name	7.2	Handling and Storage	160
CAS: HAZARD IDENTIFICATION						
OSHA Health Hazard Category Name	Common identification or name that stands for the Occupational Safety and Health Administration (OSHA) health hazard category(s) for immediate and long-term health hazards in accordance with 29 CFR §1910.1200 Appendix A. Examples: Carcinogen, Corrosive, Highly Toxic, Irritant, Sensitizer, and Toxic.	ORGANIZATION-HAZARD-CATEGORY	Hazard_Category_Code; Hazard_Category_Long_Name; Hazard_Category_Short_Name	20	CAS Data	380
OSHA Physical Hazard Type Name	The common identification(s) or name(s) that stands for the Occupational Safety and Health Administration (OSHA) physical hazard type. Examples: Flammable, Compressed gas, Explosive, Pyrophoric, etc.	HAZARD-CATEGORY	Hazard_Category_Long_Name	20	CAS Data	385
MATERIAL HANDLING & STORAGE						
Handling Precautions Text	A statement providing details about precautions when handling the material to avoid reaction hazards.	SAFE-HANDLING-PRACTICE	Safe_Handling_Practice_Summary_Text; Safe_Handling_Practice_Details_Text	7.1	Handling and Storage	156
Work Hygienic Practices Text	A statement providing details about the work hygienic practices that should be followed for use of the material.	GENERAL-HYGIENE-CONSIDERATION	General_Hygiene_Consideration_Summary_Text; General_Hygiene_Consideration_Details_Text	7.1	Handling and Storage	158
Storage Precautions Text	A statement providing details about precautions when storing the material to avoid reaction hazards. Storage precautions also identify any equipment or special containers that are required for transfer or storage.	STORAGE-PRACTICE	Storage_Practice_Summary_Text; Storage_Practice_Details_Text	7.1	Handling and Storage	157
Hazard Storage Area Type Code	The code that stands for a Hazardous Storage Area identified in DLA I4145.11, 13 Jan 1999 that applies to a material or product based on its primary hazard characteristic. Examples: A for Radioactive, C for Corrosive.	STORAGE-PRACTICE	Storage_Practice_Name	7.2	Handling and Storage	161
Hazard Storage Area Type Name	The common identification or name that stands for one of the ten Hazardous Materials Storage Areas identified in DLA I4145.11, 13 Jan 1999 that applies to a material or product based on its primary hazard characteristic. Examples: Radioactive, Corrosive	STORAGE-PRACTICE	Storage_Practice_Name	7.2	Handling and Storage	162

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Label Hazard Precautionary Statements Text	A statement providing details about the special hazard precautions for the product. Examples: Hazards to Humans & Domestic Animals - Causes moderate eye irritation. Avoid contact with eyes. Wash thoroughly with soap and water after handling.	SAFE-HANDLING-PRACTICE	Safe_Handling_Practice_Details_Text; Safe_Handling_Practice_Summary_Text; Safe_Handling_Practice_Name	16	Other Information	311
ENGINEERING CONTROLS						
Engineering Controls Type Name	The common identification or name that stands for the type of mechanical or process engineer method(s) to reduce or control exposure. Examples: Ventilation, Barriers, Laboratory hood, etc.	ENGINEERING-CONTROL	Engineering_Control_Type_Name	8.2	Exposure Controls and Personal Protection	170
Engineering Controls Text	A statement providing details about the mechanical or process engineering methods to reduce or control exposure when using the material. Examples: "Facilities storing or utilizing this preparation should be equipped with an eyewash fountain and a safety shower."	ENGINEERING-CONTROL	Engineering_Control_Summary_Text; Engineering_Control_Details_Text	8.2	Exposure Controls and Personal Protection	169
Personal Protective Equipment Type Name	The common identification or name that stands for the equipment including clothing which is intended to be worn or held by a person for use of the material and which protects him against one or more risks to his health or safety. Examples: Safety helmets, Gloves, Safety goggles, Blast shields, Hard hats, Safety footwear, and Safety harnesses.	PERSONAL-PROTECTIVE-EQUIPMENT	Personal_Protective_Equipment_Name	8.3	Exposure Controls and Personal Protection	173
Personal Protective Equipment Body Region Name	The common identification or name that stands for the bodily organ, or part to be protected by the Personal Protective Equipment (PPE). Examples: Eye, Face, Head, Foot, Skin, Torso, Lungs, and Hand.	SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT	Route_Of_Exposure_Name	8.3	Exposure Controls and Personal Protection	171
Personal Protective Equipment Text	A statement providing details about the use of the Personal Protective Equipment (PPE). Examples: Glove use specifying the best barrier material such as butyl rubber or neoprene.	PERSONAL-PROTECTIVE-EQUIPMENT	Personal_Protective_Equipment_Summary_Text; Personal_Protective_Equipment_Details_Text	8.3	Exposure Controls and Personal Protection	172
Supplemental Health and Safety Text	A statement providing details about the supplemental safety and health control measures for use of the material.	SAFE-HANDLING-PRACTICE	Safe_Handling_Practice_Details_Text; Safe_Handling_Practice_Summary_Text	8.3	Exposure Controls and Personal Protection	174
OBSERVABLE CHARACTERISTICS						
Appearance Description Text	A statement providing details about the look or outward aspect of the material. For example: Clear, red concentrate.	MATERIAL; SUBSTANCE	Material_Appearance_Summary_Text; Material_Appearance_Details_Text; Substance_State_Complexity_Type_Name; Substance_Clarity_Name; Substance_Color_Name; Substance_Gross_Structural_Type_Name	9	Physical and Chemical Properties	175
Odor Description Text	A statement providing details about the physiological sensation due to contact of the material's molecules with the olfactory nervous system. For example: Concentrate with slight clean and fresh odor.	ODOR	Odor_Description_Text	9	Physical and Chemical Properties	186
PHYSICAL / CHEMICAL CHARACTERISTICS						

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Physical State Text	A code that denotes the form of the material at the specific temperature and pressure, as received. Examples: solid, liquid, gas. Additional, more detailed, specifications can be used to identify the material's physical characteristics and the associated hazards. Picklist options may include: nanoparticle solid, aqueous liquid, liquid emulsion, liquid crystal, gaseous plasma, granular solid, gel solid, crystalline solid, superfluid liquid, supersolid, paramagnetic solid, ferromagnetic solid, quark-gluon plasmas, Bose-Einstein condensates, and strange matter.	SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Type_Name	1	Product and Company Identification	80
Product Pure/Mixture Indicator	A designation of whether the product is a pure chemical substance or a mixture. Example: Pure, Mixture.	SUBSTANCE	Substance_Goss_Structural_Type_Name	1	Product and Company Identification	88
Molecular Weight	The numeric value for the molecular weight of a compound in grams, corresponding to the sum of the atomic weights of the elements in the compound.	CHEMICAL-COMPOUND	Chemical_Compound_Molecular_Weight	9	Physical and Chemical Properties	185
Density	The numeric value for the weight per unit volume of a substance, usually a liquid.	SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Specific_Gravity_Quantity	9	Physical and Chemical Properties	179
Density Unit of Measure Code	The code that stands for the unit of measure code for measuring density of the material as compared to a standard (such as air). Examples: gm/cc, gm/ml	UNIT-OF-MEASURE	Unit_of_Measure_Code	9	Physical and Chemical Properties	180
Vapor Density Quantity	The numeric value for the density of the material vapor as compared to a standard (such as air).	SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Specific_Gravity_Quantity	9	Physical and Chemical Properties	202
Specific Gravity Gas Quantity	The numeric value for the ratio of the mass of a given volume of the material to an equal volume of air for gases.	SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Specific_Gravity_Quantity	9	Physical and Chemical Properties	200
Specific Gravity Liquid Quantity	The numeric value for the ratio of the mass of a given volume of the material to an equal volume of water for liquids and solids.	SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Specific_Gravity_Quantity	9	Physical and Chemical Properties	201
pH Quantity	pH is a logarithmic scale of acidity based on the activity of hydrogen ions in a solution. Example: pure water in contact with the atmosphere has a pH of 7.0.	LIQUID	Liquid_pH_Quantity	9	Physical and Chemical Properties	193
pH Text	A statement providing details about the conditions and circumstances under which the pH of the solution was measured.	LIQUID	Liquid_pH_Description_Text	9	Physical and Chemical Properties	194
Viscosity	The numeric value on a scale for the tendency of a fluid to resist internal flow without regard to its density.	LIQUID	Liquid_Viscosity_Quantity	9	Physical and Chemical Properties	206
Viscosity Unit of Measure Code	The code that stands for the unit of measure code for measuring the viscosity of the material. Examples: Ps, cPs	UNIT-OF-MEASURE	Unit_of_Measure_Code	9	Physical and Chemical Properties	207
Corrosion Rate	The rate of the electrochemical degradation of metals or alloys due to reaction with their environment.	MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY	Material_Miscellaneous_Property_Quantity	9	Physical and Chemical Properties	177
Evaporation Rate	The numeric value for the rate at which a material becomes a vapor in air at a specified temperature, usually normal room temperature. The rate is given in comparison to a chemical that evaporates fairly quickly, such as n-butyl acetate, but other chemicals such as ether may be used also.	LIQUID; MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY	Liquid_Relative_Evaporation_Rate; Material_Miscellaneous_Property_Quantity	9	Physical and Chemical Properties	181

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Evaporation Rate Reference Material Name	The common identification or name that stands for the established standard material (normally n-butyl acetate) that has been used to determine the evaporation rate of the material.	SECONDARY-MATERIAL-MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY	Unit_Of_Measure_Description_Text	9	Physical and Chemical Properties	182
CAS: PHYSICAL / CHEMICAL CHARACTERISTICS						
Molecular Formula	Abbreviated representation for the chemical structure of a substance. Letters are used to represent elemental components, and numerical subscripts provide the ratio for the elements in the material's molecules. Examples include: H2O for water; C6H5CO2H for benzoic acid; C4H11NO2 for diethanolamine.	CHEMICAL-COMPOUND	Chemical_Compound_Molecular_Formula_Text	20	CAS Data	371
Molecular Weight	The numeric value, in unit of measure, for the sum of the atomic weights of the elements that make up the chemical's formula.	CHEMICAL-COMPOUND	Chemical_Compound_Molecular_Weight	20	CAS Data	372
Density	The numeric value for the weight per unit volume of a substance or chemical.	SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Specific_Gravity_Quantity	20	CAS Data	352
Density Unit of Measure Code	Code representing the unit of measure of the material density, which is the mass per unit of volume. Examples: grams/cubic centimeter (gm/cc), grams per milliliter (gm/ml), and kilograms per cubic meter (kg/m³).	UNIT-OF-MEASURE	Unit_of_Measure_Code	20	CAS Data	353
Specific Gravity	A dimensionless ratio between the mass of a material divided by the mass of an equal volume of water at 4 degrees C (39 degrees F).	SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Specific_Gravity_Quantity	20	CAS Data	403
Specific Gravity Temperature	The numeric value for the temperature of the material at which the specific gravity was measured.	SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Nominal_Temperature	20	CAS Data	403.1
Chemical Comments Text	A statement that may contain additional information about a chemical substance. For example: "This substance is a mixture of isomers where the ratio is unknown."	MATERIAL	Material_Comments_Text	20	CAS Data	342
PHYSICAL / CHEMICAL CHARACTERISTICS: TEMPERATURE THRESHOLDS						
Boiling Point Temperature	The temperature at which a liquid becomes a gas at normal atmospheric pressure. At this temperature, the vapor pressure of the liquid is equal to the surrounding atmospheric pressure.	MATERIAL-TEMPERATURE-THRESHOLD	Material_Temperature_Threshold_Temperature	9	Physical and Chemical Properties	176
Decomposition Point Temperature	The numeric value for the temperature of the material, in unit measure, that causes the breakdown of the material into parts or elements or simpler compounds.	MATERIAL-TEMPERATURE-THRESHOLD	Material_Temperature_Threshold_Temperature	9	Physical and Chemical Properties	178
Freezing Point Temperature	The numeric value for the temperature of the material, in unit measure, at which it changes from liquid to solid state.	MATERIAL-TEMPERATURE-THRESHOLD	Material_Temperature_Threshold_Temperature	9	Physical and Chemical Properties	183
Melting Point Temperature	The numeric value for the temperature of the material, in unit measure, at which it changes from solid to liquid state.	MATERIAL-TEMPERATURE-THRESHOLD	Material_Temperature_Threshold_Temperature	9	Physical and Chemical Properties	184
CAS: PHYSICAL / CHEMICAL CHARACTERISTICS - TEMPERATURE THRESHOLDS						
Boiling Point Temperature	The numeric value, in unit of measure, for temperature at which a liquid becomes a gas at normal atmospheric pressure (e.g., 1 atmosphere or 14.7psi). At this temperature, the vapor pressure of the liquid is equal to the surrounding atmospheric pressure.	MATERIAL-TEMPERATURE-THRESHOLD	Material_Temperature_Threshold_Temperature	20	CAS Data	327

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Flash Point Temperature	The numeric value, in unit of measure, for the lowest temperature of a liquid that produces a sufficient concentration of vapor at the liquid surface to form an ignitable mixture with air. Example, gasoline has a flash point of -40F.	MATERIAL-FLASH-POINT-EVALUATION-TEMPERATURE	Flash_Point_Evaluation_Temperature	20	CAS Data	369
Temperature Unit of Measure Code	Code representing the unit of measure for temperature. Examples: C, F, K.	UNIT-OF-MEASURE	Unit_of_Measure_Code	20	CAS Data	406
PHYSICAL / CHEMICAL CHARACTERISTICS: VAPOR PRESSURE						
Material Vapor Pressure Quantity	The numeric value for the pressure exerted by the liquid's vapor when the liquid and vapor are in dynamic equilibrium.	SUBSTANCE-VAPOR-PRESSURE	Substance_Vapor_Pressure_Quantity	9	Physical and Chemical Properties	205
Material Vapor Pressure Unit of Measure Code	The code that stands for the unit of measure code for measuring the pressure exerted by the liquid's vapor when the liquid and vapor are in dynamic equilibrium. Examples: psi, atm, b, torr, Pa	UNIT-OF-MEASURE	Unit_of_Measure_Code	9	Physical and Chemical Properties	204
Material Vapor Pressure Temperature	The numeric value for the temperature of the material, in unit measure, at which vapor pressure has been measured.	SUBSTANCE-VAPOR-PRESSURE	Substance_Vapor_Pressure_Temperature	9	Physical and Chemical Properties	203
CAS: PHYSICAL / CHEMICAL CHARACTERISTICS - VAPOR PRESSURE						
Vapor Pressure Quantity	The numeric value, in unit of measure, for the force per unit area exerted by a vapor that is at equilibrium over a liquid, which is held in a closed container at a specified temperature.	SUBSTANCE-VAPOR-PRESSURE	Substance_Vapor_Pressure_Quantity	20	CAS Data	415
Vapor Pressure Temperature	The numeric value for the temperature of the material at which the vapor pressure was measured.	SUBSTANCE-VAPOR-PRESSURE	Substance_Vapor_Pressure_Temperature	20	CAS Data	416
Vapor Pressure Unit of Measure Code	Code representing the unit of measure for the vapor pressure above a liquid in a closed container. Examples: psi, atm, bar, torr, pascal.	UNIT-OF-MEASURE	Unit_of_Measure_Code	20	CAS Data	417
PHYSICAL / CHEMICAL CHARACTERISTICS: PARTITION COEFFICIENT						
Partition Coefficient	A constant number symbolizing the ratio of the concentration of a solute in the upper of two phases in equilibrium to its concentration in the lower phase. Chemicals in solution are partitioned into dissolved and particulate adsorbed phase based on their corresponding sediment-to-water partitioning coefficient. (Source: Office of Water: Protocol for Developing Sediment Total Maximum Daily Load (TMDL): Glossary Term Detail)	SUBSTANCE	Substance_Water_N_Octanol_Partition_Coefficient_Quantity	9	Physical and Chemical Properties	189
PHYSICAL / CHEMICAL CHARACTERISTICS: SOLUBILITY						
Solvent Name	The common identification or name that stands for the solvent used for material solubility. For example; Water.	SUBSTANCE-IN-SOLUTION	Substance_In_Solution_Solvent_Identifier	9	Physical and Chemical Properties	199
Solubility in Solvent Name	The common identification or name that denotes the extent to which the material is soluble in a specific solvent. Examples: Slightly soluble; Insoluble; Very soluble.	SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Descriptive_Value_Name	9	Physical and Chemical Properties	195
Solubility in Solvent Quantity	The numeric value for the maximum equilibrium amount of solute which can normally dissolve per amount of solvent.	SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Solid_Solubility_Quantity	9	Physical and Chemical Properties	196
Solubility in Solvent Quantity Unit of Measure Code	The code that stands for the unit of measure code for measuring solubility of a material in a solvent. Normally, this is expressed in units of weight per volume of solution. Examples: kg/m3, g/L	UNIT-OF-MEASURE	Unit_of_Measure_Code	9	Physical and Chemical Properties	197

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Solubility in Solvent Temperature	The numeric value for the temperature of the solvent, in unit measure, that the material solubility was measured at.	SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Temperature_Quantity	9	Physical and Chemical Properties	198
PHYSICAL / CHEMICAL CHARACTERISTICS: REACTIVITY						
Stability Indicator	A designation of whether the material remains unchanged or undergoes changes during storage or use. Examples: Yes/No.	SUBSTANCE	Substance_Stable_Indicator	10.1	Stability and Reactivity	215
Stability Condition to Avoid Text	A statement providing details about the type of condition(s) which may affect the stability of a material.	SUBSTANCE-REACTION	Substance_Reaction_Summary_Text; Substance_Reaction_Details_Text	10.2	Stability and Reactivity	216
Materials to Avoid Text	A statement providing details about the material(s) to avoid which may affect the stability of material.	SUBSTANCE-REACTION	Substance_Reaction_Details_Text; Substance_Reaction_Summary_Text	10.3	Stability and Reactivity	217
Hazardous Decomposition Product Name	The common identification or name that stands for the hazardous material(s) produced in dangerous amounts by burning, oxidization, or by heating in welding. Examples: Thermal decomposition products such as CO, CO2, and HCL from vinyl chloride plastics.	SUBSTANCE-REACTION-RESULTING-SUBSTANCE	Substance_Reaction_Resulting_Substance_Identifier	10.4	Stability and Reactivity	218
Hazardous Polymerization Conditions to Avoid Text	A statement providing details about the conditions that could start polymerization.	CONDITION-TO-AVOID	Condition_To_Avoid_Details_Text; Condition_To_Avoid_Summary_Text	10.4	Stability and Reactivity	219
RELATIVE COMPOSITION						
Percent Volatile by Volume Quantity	The numeric value for the tendency, expressed as a percent, of a solid or liquid material to pass into the vapor state at given temperature (ambient temperature of 70 degrees Fahrenheit). Specifically the vapor pressure of a component divided by its mole fraction in the liquid or solid.	SUBSTANCE	Substance_Volatile_Organic_Compound_Volume_Percent_Quantity	9	Physical and Chemical Properties	192
Percent Volatile by Volume Non Numerical Percent Text	The text that describes the manufacturer's non-numerical percentage of volatile components by volume. Examples: Trace, Less than 10%, etc.	SUBSTANCE	Substance_Volatile_Organic_Compound_Volume_Non_Numeric_Quantity_Text	9	Physical and Chemical Properties	192.1
Percent Volatile by Volume Quantity for Non Numerical Percent Calculations Value	The numeric value that accounts for the manufacturer's non-numerical percentage of volatile components in a specific material formulation, expressed as a percent by volume.	SUBSTANCE	Substance_Volatile_Organic_Compound_Volume_Non_Numerical_Percent_Text	9	Physical and Chemical Properties	192.2
Percent Volatile by Weight Quantity	The numeric value for the tendency, expressed as a percent of the total weight, of a solid or liquid material to pass into the vapor state at given temperature (ambient temperature of 70 degrees Fahrenheit).	SUBSTANCE	Substance_Volatile_Organic_Compound_Weight_Percent_Quantity	9	Physical and Chemical Properties	192.3
Percent Volatile by Weight Non Numerical Percent Text	The text that describes the manufacturer's non-numerical percentage of volatile components by weight. Examples: Trace, Less than 10%, etc.	SUBSTANCE	Substance_Volatile_Organic_Compound_Weight_Non_Numeric_Quantity_Text	9	Physical and Chemical Properties	192.4
Percent Volatile by Weight Quantity for Non Numerical Percent Calculations Value	The numeric value that accounts for the manufacturer's non-numerical percentage of volatile components in a specific material formulation, expressed as a percent by weight.	SUBSTANCE	Substance_Volatile_Organic_Compound_Weight_Non_Numerical_Percent_Text	9	Physical and Chemical Properties	192.5
Percent Solid Quantity	The percentage of solid by weight or volume of the material. For example, a paint may contain 45 percent solids that will adhere to the item being painted.	SUBSTANCE	Substance_Solid_Percent_By_Weight_Quantity; Substance_Solid_Percent_By_Volume_Quantity	9	Physical and Chemical Properties	190
Percent Solid Unit of Measure Type Name	The common identification or name that stands for the unit of measure type for measuring percentage of solid in a material. Examples: Weight, Volume	SUBSTANCE	Substance_Solid_Percent_By_Weight_Quantity; Substance_Solid_Percent_By_Volume_Quantity	9	Physical and Chemical Properties	191
RELATIVE COMPOSITION: VOLATILE ORGANIC COMPOUND						

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
Volatile Organic Compound Quantity	The numeric value, in unit measure, of volatile organic compound content within the product.	SUBSTANCE; OBJECT-COMPONENT	Substance_Volatile_Organic_Compound_Weight_Percent_Quantity; Substance_Volatile_Organic_Compound_Volume_Percent_Quantity; Object_Component_Weight_Quantity; Object_Component_Volume_Quantity	9	Physical and Chemical Properties	213
Volatile Organic Compound as Applied Quantity	The rate(s) indicating the Volatile Organic Compound (VOC) content of the material as applied.	OBJECT	Object_Volatile_Organic_Compound_As_Applied_Ratio_Quantity	9	Physical and Chemical Properties	209
Volatile Organic Compound Unit of Measure Code	The code that stands for the unit of measure code for measuring volatile organic compound content within the product. Examples: g/l, lb/gal	UNIT-OF-MEASURE	Unit_of_Measure_Code	9	Physical and Chemical Properties	214
Volatile Organic Compound Percent by Volume	The numeric value for the percent by volume of volatile organic compound in the material.	SUBSTANCE	Substance_Volatile_Organic_Compound_Volume_Percent_Quantity	9	Physical and Chemical Properties	211
Volatile Organic Compound Percent by Weight	The numeric value for the percent by weight of volatile organic compound in the material.	SUBSTANCE	Substance_Volatile_Organic_Compound_Weight_Percent_Quantity	9	Physical and Chemical Properties	212
Volatile Organic Compound Determination Method Name	The common identification or name that stands for the method used to determine the volatile organic compound (VOC) content. Example: Southern California Air Quality Management District Rule 443.1	OBJECT	Object_Volatile_Organic_Compound_As_Applied_Test_Method_Name_Text	9	Physical and Chemical Properties	210
Volatile Organic Compound as Applied Test Method Text	The text description of the application method used to determine the Volatile Organic Compound (VOC) as applied method.	OBJECT	Object_Volatile_Organic_Compound_As_Applied_Test_Method_Details_Text; Object_Volatile_Organic_Compound_As_Applied_Test_Method_Summary_Text	9	Physical and Chemical Properties	208
STUDIES						
Ecological Text	A statement providing details about the ecological information for the material. Examples: ecotoxicological information such as bioconcentration, and chemical rate information such as 20-day biochemical oxygen demand.	ADVERSE-ENVIRONENTAL-EFFECT; SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT	Adverse_Environmental_Effect_Name; Adverse_Environmental_Effect_Summary_Text; Adverse_Environmental_Effect_Details_Text Substance_Adverse_Environmental_Effect_Details_Text; Substance_Adverse_Environmental_Effect_Name; Substance_Adverse_Environmental_Effect_Summary_Text	12	Ecological	231
Epidemiologic Effects Text	A statement providing details about the root causes of pathogens, diseases and epidemics of populations, as a result of exposure to toxic chemicals.	EXPOSURE-STUDY-ADVERSE-HEALTH-EFFECT	Exposure_Study_Substance_Adverse_Health_Effect_Description_Text	11	Toxicological	220
DISPOSAL CONSIDERATIONS						
EPA Hazardous Waste Code for Unused Product Code	The EPA Hazardous Waste Number(s) as waste code(s) established under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, Subparts C and D, for use on hazardous waste disposal manifests for the material in its original form and packaging.	SUBSTANCE-FAMILY; SUBSTANCE-MATCHING-SYNONYM	Substance_Family_Name; Substance_Synonym_Text	13	Disposal Considerations	232
EPA Hazardous Waste Name for Unused Product Text	The common identification or name that stands for the EPA Hazardous Waste Number established under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, Subparts C and D.	SUBSTANCE-FAMILY; SUBSTANCE-MATCHING-SYNONYM	Substance_Family_Name; Substance_Synonym_Text	13	Disposal Considerations	233
Waste Disposal Method Text	A statement providing details about the waste disposal method code for a material.	DISPOSAL-CONSIDERATION	Disposal_Consideration_Summary_Text; Disposal_Consideration_Details_Text	13	Disposal Considerations	234
EXPOSURE LIMITS						

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
LC50 Quantity	The numeric value for concentration, in unit measure, of the chemical in air which when inhaled by a group of test animals for a certain length of time (usually 4 hours), results in the death of 50% of those animals.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	11	Toxicological	222
LC50 Description Text	A statement providing details about the test that established the concentration of the chemical in air which when inhaled, results in the death of 50% of the test animals. Information may include the length of time for exposure (usually 4 hours), type of test animal, size of test population, or other information.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Description_Text	11	Toxicological	221
LC50 Unit of Measure Code	The code that stands for the unit of measure for the lethal concentration of the ingredient or the product. Examples: ppm, mg/m3.	UNIT-OF-MEASURE	Unit_of_Measure_Code	11	Toxicological	223
LD50 Description Text	A statement providing details about the test that established the amount of the chemical that resulted in the death of 50% of the test animals. Information may include the route of exposure, type of test animal, size of test population, or other information.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Description_Text	11	Toxicological	224
LD50 Quantity	The numeric value for amount of the chemical, in milligrams of a substance per kilograms of body weight, that when administered in a single dose to a group of test animals by a defined route results in the death of 50% of the test population of animals.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	11	Toxicological	225
CAS: EXPOSURE LIMITS - ACGIH						
ACGIH Ceiling Quantity	The numeric value, in unit of measure, for the Threshold Limit Value Ceiling (TLV-C) for inhalation exposure recommended by the American Conference of Governmental Industrial Hygienists' (ACGIH) as a maximum concentration that should not be exceeded even instantaneously. Examples: 2 mg/m3 for Sodium Hydroxide.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	20	CAS Data	322
ACGIH Notes Text	Footnotes or a statement providing details for chemical's recommended inhalation exposure guidelines established by the American Conference of Governmental Industrial Hygienists' (ACGIH).	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Description_Text	20	CAS Data	323
ACGIH Short Term Exposure Limit Quantity	The numeric value, in unit of measure, set by the American Conference of Governmental Industrial Hygienists' (ACGIH) as a recommended short term inhalation exposure limit based on a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday. Examples: 75.000 ppm for Methyl iso-butyl ketone.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	20	CAS Data	324
ACGIH Threshold Limit Value Quantity	The numeric value, in unit of measure, for the Threshold Limit Value (TLV) for inhalation exposure recommended by the American Conference of Governmental Industrial Hygienists' (ACGIH) as an allowable time-weighted average (TWA) air concentration during a normal eight-hour work day. Examples: ACGIH TLV: 10 mg/m3 DUST for Calcium Carbonate (as contaminant).	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	20	CAS Data	325

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
TWA Concentration Unit of Measure Code	Unit of measure for Recommended Exposure Limit (REL), Short Term Exposure Limit (STEL), Immediately Dangerous to Life or Health (IDLH) are time weighted average (TWA) concentrations of a substance in air. Examples: mg/m3, ppm, mppcf.	UNIT-OF-MEASURE	Unit_of_Measure_Code	20	CAS Data	414
CAS: EXPOSURE LIMITS - NIOSH						
NIOSH Immediately Dangerous to Life or Health Concentration Quantity	The numeric value, in unit of measure, for the Immediately Dangerous to Life or Health (IDLH) limit set by the National Institute for Occupational Safety and Health (NIOSH). The IDLH is an atmospheric chemical concentration when exposure is likely to cause death, permanent adverse health effects, or prevent escape. Example: 25 mg/m3 for Aldrin.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	20	CAS Data	376
NIOSH Recommended Exposure Limit Quantity	The numeric value, in unit of measure, that is the Recommended Exposure Limit (REL) is recommended by the National Institute for Occupational Safety and Health (NIOSH), and is a time-weighted-average value for a normal working lifetime (up to 10 hours per day, 40 hours per week, for 40 years. Example: 100.0 micrograms/cubic meter for Lead.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	20	CAS Data	377
NIOSH Recommended Exposure Limit Time Period Quantity	The numeric value for the number of hours per day used by the National Institute for Occupational Safety and Health (NIOSH) in establishing the Recommended Exposure Limit (REL). Examples: 8 hours, 10 hours.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Timeframe_Days_Quantity; Substance_Exposure_Limit_Timeframe_Hours_Quantity; Substance_Exposure_Limit_Timeframe_Minutes_Quantity; Substance_Exposure_Limit_Timeframe_Seconds_Quantity	20	CAS Data	378
NIOSH REL Ceiling Quantity	The numeric value, in unit of measure, for a Recommended Exposure Limit (REL) set by the National Institute for Occupational Safety and Health (NIOSH) as a concentration that should not be exceeded during any part of the working exposure; if instantaneous monitoring is not feasible, the ceiling must be assessed as a 10-minute time-weighted-average (TWA) exposure. Example: 300 mg/m3 for methyl isobutyl ketone.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	20	CAS Data	375
NIOSH Short Term Exposure Limit Quantity	The numeric value, in unit of measure, that is the Short Term Exposure Limit (STEL) recommended by the National Institute for Occupational Safety and Health (NIOSH), and is a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday. Example: 250 ppm for ethyl bromide.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	20	CAS Data	379
CAS: EXPOSURE LIMITS - OSHA						
OSHA Permissible Exposure Limit for Substance In Air Quantity	The numeric value in milligrams per cubic meter (mg/m3) for OSHA's Permissible Exposure Limits (PELs). PELs are enforceable worker exposure limits as a time weighted average (TWA) concentration for milligrams of a substance per cubic meter of air and is contained in 29 CFR 1910.1000, Table Z-1, and the OSHA Expanded Standards for individual chemicals. Example: Acetone OSHA PEL = 2400 mg/m3 (TWA)	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	20	CAS Data	382

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
OSHA Permissible Exposure Limit for Vapor or Gas In Air Quantity	The numeric value in parts per million (ppm) for OSHA's Permissible Exposure Limits (PELs), as contained in 29 CFR 1910.1000, Table Z-1, and the OSHA Expanded Standards for individual chemicals. PELs are enforceable worker exposure limits as a time weighted average (TWA) concentration of amount of vapor or gas per million parts of contaminated air, measured by volume at 25 degrees C and 760 torr. Example: Acetone OSHA PEL = 1000 ppm (TWA).	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	20	CAS Data	383
OSHA Permissible Exposure Limit Notes Text	Footnotes or a statement providing details for chemical's OSHA Permissible Exposure Limits from Table Z-1 of 29 CFR 1910.1000.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Description_Text	20	CAS Data	384
OSHA Short Term Exposure Limit Quantity	The numeric threshold value, in unit of measure, for OSHA's short term exposure limit (STEL); a 15-minute time-weighted average (TWA) concentration for a chemical that should not be exceeded at any time during a workday and that workers may be exposed for a short period (usually 15 minutes) without experiencing irritation, long-term or irreversible tissue damage, or reduced alertness. Examples: OSHA STEL: 750 ppm for Pentane.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	20	CAS Data	386
Time Unit of Measure	The code that stands for the unit of measure for a measured or measurable period during which an action, process, or condition exists or continues. Examples: day, hour, minute.	UNIT-OF-MEASURE	Unit_of_Measure_Name	20	CAS Data	387.1
OSHA Z-2 Ceiling Peak Permissible Exposure Limit Quantity	The numeric threshold value, in unit of measure, for OSHA's acceptable maximum peak concentration limit above the acceptable ceiling concentration for an 8-hr shift (Ref: 29 CFR 1910.1000, Table Z-2). Value is a time-weighted average (TWA) concentration. Example: Benzene OSHA Peak PEL = 50 ppm (TWA), with a maximum duration of 10 minutes.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	20	CAS Data	388
OSHA Z-2 Ceiling Permissible Exposure Limit Quantity	The numeric threshold value, in unit of measure, for OSHA's Permissible Exposure Limit (PEL) ceiling value (Ref: 29 CFR 1910.1000, Table Z-2) as a time-weighted average concentration. Example: Benzene OSHA Ceiling PEL = 25 ppm.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	20	CAS Data	389
OSHA Z-2 Ceiling Peak Permissible Exposure Limit Maximum Duration	The maximum time period allowed for workers to be exposed to the Permissible Exposure Limit (PEL) Peak concentration. Example: Maximum duration for PEL Peak is 10 minutes for Benzene.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Timeframe_Days_Quantity; Substance_Exposure_Limit_Timeframe_Hours_Quantity; Substance_Exposure_Limit_Timeframe_Minutes_Quantity; Substance_Exposure_Limit_Timeframe_Seconds_Quantity	20	CAS Data	387
OSHA Z-3 Mineral Dust Value Text	The numeric or formula limit value set by the Occupational Safety and Health Administration (OSHA) for mineral dust (Ref: 29 CFR 1910.1000, Table Z-3). Example: Crystalline silica has an OSHA Z-3 PEL of 250/%SiO2+5 mppcf.	SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Description_Text	20	CAS Data	390
CAS: REPORTING LIMIT - CAA						
CAA Risk Management Plan Toxic Limit Quantity	The numeric threshold value, in unit of measure, for the toxic chemical that is regulated under Section 112(r) of the Clean Air Act (CAA) (40 CFR Sec 68.130, Table I.).	REGULATION-REQUIREMENT	Regulation_Requirement_Substance_Limit_Weight_Quantity	20	CAS Data	334
CAS: REPORTING LIMIT - EHS						

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
EHS Lower Threshold Planning Quantity	The numeric limit that if met by the amount of the Extremely Hazardous Substance (EHS) at the facility requires notification under EPCRA sections 302 and 303. The Lower Threshold Planning Quantity (TPQ) (e.g., "1,000" in TPQ listing of 1,000/10,000) applies only when the chemical is in the physical form of a powder (with particle size less than 100 microns), a solution, or molten; or meets the National Fire Protection Association (NFPA) reactivity rating of 2, 3, or 4.	REGULATION-REQUIREMENT	Regulation_Requirement_Substance_Limit_Weight_Quantity	20	CAS Data	354
EHS Upper Threshold Planning Quantity	The numeric threshold value, in unit of measure, that if met by the amount of the Extremely Hazardous Substance (EHS) at the facility requires notification under EPCRA sections 302 and 303. The Upper Threshold Planning Quantity (TPQ) (e.g., "10,000" in TPQ listing of 1,000/10,000) applies to all forms of the chemical except the more dispersible or reactive forms, which are addressed by the Upper TPQ.	REGULATION-REQUIREMENT	Regulation_Requirement_Substance_Limit_Weight_Quantity	20	CAS Data	355
CAS: REPORTING LIMIT - EPCRA						
EPCRA Extremely Hazardous Substance Reportable Quantity	The numeric value, in unit of measure, for the Reportable Quantity (RQ) of an Extremely Hazardous Substance (EHS). Example: 100 pounds for CAS Registry Number 71-63-6 (Digitoxin).	REGULATION-REQUIREMENT	Regulation_Requirement_Substance_Limit_Weight_Quantity	20	CAS Data	366
EPCRA 311/312 Lower Threshold Quantity	The numeric threshold value, in unit of measure, that if met by the amount of the hazardous substance at the facility requires reporting under EPCRA sections 311 and 312.	REGULATION-REQUIREMENT	Regulation_Requirement_Substance_Limit_Weight_Quantity	20	CAS Data	362
EPCRA 311/312 Upper Threshold Quantity	The numeric threshold value, in unit of measure, that if met by the amount of the hazardous substance at the facility requires reporting under EPCRA sections 311 and 312.	REGULATION-REQUIREMENT	Regulation_Requirement_Substance_Limit_Weight_Quantity	20	CAS Data	365
Persistent Bioaccumulative and Toxic Chemical Threshold Quantity	The numeric threshold value, in unit of measure, set for each Persistent Bioaccumulative and Toxic (PBT) chemical that when met by the amounts Manufactured, Processed, or Otherwise Used at a facility during a calendar year requires reporting. Examples: 0.1 grams for Dioxin and dioxin-like compounds; 10 pounds for Mercury.	REGULATION-REQUIREMENT	Regulation_Requirement_Substance_Limit_Weight_Quantity	20	CAS Data	394
CERCLA Reportable Quantity	The numeric threshold value, in unit of measure, for the Reportable Quantity (RQ) of a chemical substance (e.g., chromic acid), category (chlorinated phenols other than those listed elsewhere), or material (e.g., bag house dusts and filter/separation solids from the production of carbamates and carbamoyl oximes) regulated under CERCLA section 102, as listed in 40 CFR Part 302, Table 302.4. A spill of the chemical that meets or exceeds the RQ in any 24 hour period requires both notification to the NRC under section 103 of CERCLA, and notification to the SERC and LEPC under section 304 of EPCRA. Examples: 10 pounds for CAS Registry Number 71-43-2 (Benzene).	REGULATION-REQUIREMENT	Regulation_Requirement_Substance_Limit_Weight_Quantity	20	CAS Data	339
CAS: REPORTING LIMIT - OSHA						

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	ATTRIBUTE NAME	#	SECTION NAME	Row ID
De Minimis Limit Percentage Quantity	Numeric value that represents the lowest percent composition by weight for the concentration of a chemical substance or category in a purchased mixture below which the concentration can be excluded from calculations under the OSHA Hazard Communication Standard (29 CFR 1910.1200(d)(4)), and under the EPA's EPCRA section 313 calculations for Toxic Chemicals in a mixture under 40 CFR Section 372.38:(a). Examples: 0.1 for Benzene; 1.0 for Carboxin.	REGULATION-REQUIREMENT	Regulation_Requirement_De_Minimus_Weight_Percentage_Quantity	20	CAS Data	351
CAS: REPORTING LIMIT - SDWA						
SDWA Maximum Contaminant Level Quantity	The numeric value, in unit of measure, set as the Maximum Contaminant Level (MCL) concentration as a National Primary Drinking Water Standard under the Safe Drinking Water Act (SDWA). Examples: 0.1 mg/l is the MCL for Styrene.	REGULATION-REQUIREMENT	Regulation_Requirement_Substance_Limit_Weight_Quantity	20	CAS Data	400
SDWA Maximum Contaminant Level Unit of Measure Code	Code representing the unit of measure for concentration in drinking water. Examples: mg/l, MFL, pCi/L.	UNIT-OF-MEASURE	Unit_of_Measure_Code	20	CAS Data	401
CAS: REPORTING LIMIT - TRI						
TRI Threshold for Manufacture or Process Quantity	The numeric threshold value, in unit of measure, for the amount of a toxic chemical or toxic chemical category that is "manufactured" or "processed" per calendar year.	REGULATION-REQUIREMENT	Regulation_Requirement_Substance_Limit_Weight_Quantity	20	CAS Data	411
TRI Threshold for Otherwise Use Quantity	The numeric threshold value, in unit of measure, for the amount of a toxic chemical or toxic chemical category that is "otherwise used" (i.e., activity other than "manufacture" or "process") per calendar year.	REGULATION-REQUIREMENT	Regulation_Requirement_Substance_Limit_Weight_Quantity	20	CAS Data	412

Within the heading row of Table 3b, the first two columns contain the data element name and its definition as determined by the joint, collaborative BPR. Column 3 of Table 3b provides the mapping of the data element to the PHD logical data model entity. This mapping conforms to the PHD logical data model that is incorporated into the DoD business enterprise architecture, version 4.0. Columns 4 and 5 of Table 3b identify the section number and name of the appropriate American National Standards Institute (ANSI) MSDS. The "0" reference number in "#" column identifies a non-ANSI section named "Record Management." The column named "Row ID" is the row number identified in the previous versions of the data element table created in the joint, BPR working group sessions. Other than to provide a mechanism to relate this table to its earlier version, this column has no other significance.

Table 3b: PHD data elements with definitions mapped to the PHD logical data model entities[3]

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	#	SECTION NAME	Row ID
Document Country of Origin Name	The common identification or name used to identify the country in which the document is prepared.	DOCUMENT	0	Record Mgmt	4
Document Language Text	The common identification or name that stands for the language of the document.	DOCUMENT	0	Record Mgmt	6
Contractor Web Site Address Text	The URL address for the business entity's home web site for general information and possibly more links to related sites. Examples: http://www.dowagro.com/au/index.htm	ELECTRONIC-ADDRESS	1	Product and Company Identification	40
Manufacturer Web Site Address Text	The URL address for the business entity's home web site for general information and possibly more links to related sites. Examples:http://www.dowagro.com/au/index.htm	ELECTRONIC-ADDRESS	1	Product and Company Identification	72
Product Alternate Name	Alternate or interchangeable name(s) for a product, in addition to its common identification or name. Example: ABC Acetone vs. Nail Polish Remover	MATERIAL	1	Product and Company Identification	81

[3] BEA not sufficiently mature to support mapping to the attribute level

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	#	SECTION NAME	Row ID
Universal Product Code	An eleven to fourteen digit code that is represented by parallel vertical bars of varying thickness and separation that are read optically by transverse scanning. Universal Product Code (UPC) is used in commerce to uniquely identify each inventory item.	MATERIEL-CATALOG-ITEM	1	Product and Company Identification	107
Material Stock Number Status Code	The code that stands for the status of the Material Stock Number (MSN). Examples: Active, Inactive, Replaced, Discontinued, Banned, Exempt, etc.	MATERIEL-ELEMENT-TYPE	1	Product and Company Identification	73
Replacement Material Stock Number	The newly established Material Stock Number (MSN) of a MSN that has been replaced. The Material Stock Number Status Code for this material must have a status of "Active". The previously applicable MSN must have a status of "Replaced".	MATERIEL-CATALOG-ITEM	1	Product and Company Identification	96
Bulk Indicator	A designation of whether the MSN is for material procured in bulk. Examples: Yes/No	MATERIAL-CATALOG-ITEM	1	Product and Company Identification	14
Supply Basic Unit of Issue Name	The common identifier or name for the minimum unit by which a material or product is requisitioned, handled, stored, or issued. Examples: Drum, Bottle, Carton, Cylinder.	MATERIEL-CATALOG-ITEM	1	Product and Company Identification	105
Unit of Issue Container Quantity	The numeric value for total count of Units of Issue in the ordered package as established by the managing activity. Example: 24 for a case of 24 cans.	MATERIEL-CATALOG-ITEM	1	Product and Company Identification	106
Shelf Life Action Code	A code assigned to a shelf-life item to specify the type of inspection, test, or restorative action to be taken when the item has reached the end of its designated shelf-life.	MATERIEL-CATALOG-ITEM	1	Product and Company Identification	98
Shelf Life Extendible Type Code Text	A statement providing details about the period of time beginning with the date of manufacture /cure /assembly /pack and terminated by the date by which an item must be used (expiration date) or subjected to inspection /test /restoration /disposal action. Examples: One month for A, Six months for B.	MATERIEL-CATALOG-ITEM	1	Product and Company Identification	99

DATA ELEMENT NAME	DATA ELEMENT DEFINITION	ENTITY NAME	#	SECTION NAME	Row ID
Shelf Life Non Extendible Type Code Text	A code assigned to a shelf life Type I item to identify the period of time beginning with the date of manufacture /cure /assembly /pack and terminated by the date by which an item must be used (expiration date) or subjected to inspection /test /restoration /disposal action. Examples: A for one month, F for six months.	MATERIEL-CATALOG-ITEM	1	Product and Company Identification	123

Appendix D: Product Hazard Data (PHD) Logical Data Model

General Model Information:

The PHD logical data model identifies hazardous material data of interest to the DoD and shows fundamental relationships among that data. This information is of keen interest to planners, users, and responders.

- Planners define, authorize, and plan DoD execution of processes that use hazardous materials. Planners identify materials as hazardous, understand the nature of the hazards, determine how to mitigate the risks involved with the use of hazardous materials, and identify controls necessary to use the hazardous materials for the intended purpose.
- Users execute a work process involving hazardous materials to include handling, storage, or transportation of hazardous materials. Users are primarily interested in avoiding personal exposure, property damage, and environmental releases.
- Responders respond to adverse conditions resulting from exposures or releases of hazardous materials. They provide first responder aid, fight fires, or cleanup hazard causing problems.

The PHD logical data model provides a data structure to DoD's environment, safety, and occupational health professionals designed to support compliance, worker safety, and operational sustainability. The logical model is a set of integrated entity relationship diagrams (ERDs) organized as views and essential data-related business rules that are not expressed in the ERDs.

Within the PHD, the fundamental data concept is MATERIAL, defined as "a kind of distinctly identifiable physical matter about which the DoD wants to track information." This data include the ingredients and chemicals – including physical and chemical properties under specific conditions (e.g., temperature, pressure), and forms (e.g., physical state, ionization state) – present within the product. Other product information provided regards handling, storage, transportation, and fire plus other emergency control practices. Product information describes the routes of exposure, personal protective equipment, and exposure limits that apply to the material(s) too.

Product Hazard Data

The PHD contains product-specific information supplied by the manufacturer on a material safety data sheet (MSDS). At present, MSDS information is available as a document as provided by the manufacturer or supplier. When provided as individual data attributes for use the information can be used in calculations and analyses. Also, the PHD contains reference information about individual chemicals and hazards, as established by national, international, state, and local regulatory bodies, as well as environmental and safety standard-setting organizations. This information provides an authoritative source of data for use throughout the DoD.

Although the PHD logical data model is one integrated model, it is large and complex. For ease of understanding, this document displays the logical data model in

eleven views. Each view is perspective-based. Some data entities reside only in one view because they are needed only for that perspective. Some data entities reside in many views. However, whether an entity is displayed in one view, several, or all of them, it is the same entity with the same attributes and relationships in all cases. A relationship to the entity might not be visible in the view because it is not necessary to the depicted perspective, but the relationship is still in the model, as depicted in appropriate views.

Details for each of the eleven views are in the Tabs A – H within this appendix. Each Tab contains a brief summary of the view and the diagram.

TAB A: PHD Logical Data Model View - Material Components and Ingredients

The Material Components and Ingredients View depicts the product hazard data that identifies the OBJECTs, OBJECT COMPONENTs, SUBSTANCEs, and INGREDIENTs that comprise a MATERIAL CATALOG ITEM that can be purchased or otherwise obtained by the DoD.

A purchased container of a commercially-available mixture is handled in the PHD logical data model as an OBJECT, consisting of the Containing Component (e.g., container) and the mixture contained (e.g., SUBSTANCE). A purchased kit is a Containing Component that is comprised of Object Components, which are themselves OBJECTS consisting of the kit-component container and SUBSTANCE.

The OBJECTs' PACKAGING TYPE identifies the characteristics of the inner packaging, and additional information on overpack and shipping containers will be addressed in future iterations of the PHD logical data model.

This view includes information on the composition of a SUBSTANCE, based on the INGREDIENTs, and their Ingredient Percentages as given by the MATERIALs' supplier.

Identities and properties of the INGREDIENTs are further specified by delineating the CHEMICALs and PHYSICAL STATEs that are present. INGREDIENTS may exist as COMBINATION SUBSTANCEs, in that they are either a mixture of other SUBSTANCES, or a mixture of physical states, such as colloids and suspensions.

The Material Components and Ingredients View depicts the following entities:

CHEMICAL

CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM

CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM-ASSIGNMENT

CHEMICAL-COMPOUND

CHEMICAL-COMPOUND-ELEMENT

CHEMICAL-ELEMENT

CHEMICAL-ELEMENT-OXIDATION-STATE

COMBINATION-SUBSTANCE

CONTAINING-COMPONENT

GAS

GRANULATED-SOLID

INGREDIENT

INGREDIENT-PERCENTAGE

INSEPARABLE-OBJECT

ISOTOPE

LIQUID

MATERIAL

MATERIAL-LOT

MATERIAL-MANUFACTURER

MATERIEL-CATALOG-ITEM

MATERIEL-CATALOG-ITEM-COMPONENT

MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD

NON-CONTAINING-COMPONENT

OBJECT

OBJECT-COMPONENT

ORGANIZATION

PACKAGING-TYPE

RADIOISOTOPE

SOLID

SUBSTANCE

SUBSTANCE-PHYSICAL-STATE

The relevant section of the ANSI standard for the Material Safety Data Sheet (MSDS) information is Section 3. Composition/Information on Ingredients.

This view is closely related to the following views:

Substance Names, Families, and Other Groupings

Physical and Chemical Properties

Material Hazards

Substance Names, Families, and Other Groupings

Figure 2: PHD Logical Data Model View – Material Components and Ingredients

Graphics placeholder – please see companion files for model view graphics.

TAB B: PHD Logical Data Model View –Substance Names, Families, and Other Groupings

The Substance Names, Families, and Other Groupings View of the PHD logic model depicts several major ways to identify SUBSTANCEs because of: various names that may be used to identify or refer to them, similar physical properties and the types of reactions they undergo, or the many ways that they are collectively regulated under various environmental or safety and health statues, or are referred to by specific ORGANIZATIONs.

This view of the PHD logical data model also depicts some ways that SUBSTANCEs and INGREDIENTs can be protected as TRADE SECRETs, including for the names used to identify the SUBSTANCE and the percentages of INGREDIENTs.

The Substance Names, Families, and Other Groupings View of the PHD logic model depicts the following entities:

CHEMICAL

INGREDIENT

INGREDIENT-PERCENTAGE

INGREDIENT-PERCENTAGE-TRADE-SECRET

INGREDIENT-TRADE-SECRET

INGREDIENT-TRADE-SECRET-SUBSTANCE-NAME

ORGANIZATION

ORGANIZATION-SUBSTANCE-FAMILY

ORGANIZATION-SUBSTANCE-SYNONYM

REGULATION

REGULATION-REQUIREMENT

REGULATION-SUBSTANCE-FAMILY

REGULATION-SUBSTANCE-SYNONYM

SUBSTANCE

SUBSTANCE-FAMILY

SUBSTANCE-FAMILY-INCOMPATIBLE-SUBSTANCE-FAMILY

SUBSTANCE-FAMILY-REGULATION-REQUIREMENT

SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-MEMBERSHIP

SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP

SUBSTANCE-INCOMPATIBILE-SUBSTANCE

SUBSTANCE-INCOMPATIBLE-SUBSTANCE-FAMILY

SUBSTANCE-MATCHING-SYNONYM

SUBSTANCE-REGULATION-REQUIREMENT

SUBSTANCE-SYNONYM

SUBSTANCE-TRADE-SECRET

SUBSTANCE-TRADE-SECRET-SUBSTANCE-NAME

TRADE-SECRET

This view is closely related to the following views:

Physical and Chemical Properties

Material Components and Ingredients

Figure 3: PHD Logical Data Model View – Substance Names, Families, and Other Groupings

Graphics placeholder – please see companion files for model view graphics.

TAB C: PHD Logical Data Model View - Physical and Chemical Properties

The Physical and Chemical Properties View of the PHD logical model depicts data on the properties of MATERIALs, and of SUBSTANCEs. Details on SUBSTANCE properties include: a particular PHYSICAL STATE (e.g., gas, liquid, or solid), or an OXIDATION STATE (e.g., chrome VI), as well as RADIOISOTOPEs that generate radioactive emissions.

The ANSI standard for the Material Safety Data Sheet (MSDS) includes this information in Section 9; Physical and Chemical Properties.

Groupings of SUBSTANCEs are addressed as SUBSTANCE FAMILIES, and include the categories of chemicals that may be specified by a particular regulatory requirement (e.g., Polycyclic Aromatic Compounds regulated under EPCRA), as well as groupings specified by a particular ORGANIZATION (e.g., OSHA, EPA).

Alternative names that may be used to refer to the SUBSTANCE are SUBSTANCE SYNONYMs in the PHD logical model, and can address the names that are required to be used under certain environmental or health and safety regulations, as well as the common names, coding identifiers, and other types of terms that are used to refer to a particular SUBSTANCE.

The Physical and Chemical Properties View of the PHD logical data model depicts the following entities:

CHEMICAL

CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM

CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM-ASSIGNMENT

CHEMICAL-COMPOUND

CHEMICAL-COMPOUND-ELEMENT

CHEMICAL-ELEMENT

CHEMICAL-ELEMENT-OXIDATION-STATE

COMBINATION-SUBSTANCE

FLASH-POINT-EVALUATION-METHOD

GAS

GRANULATED-SOLID

INGREDIENT

INGREDIENT-PERCENTAGE

ISOTOPE

LIQUID

MATERIAL

MATERIAL-FLASH-POINT-EVALUATION

MATERIAL-MISCELLANEOUS-PROPERTY

MATERIAL-ODOR-THRESHOLD-EVALUATION

MATERIAL-TEMPERATURE-THRESHOLD

MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY

MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION

OBJECT

OBJECT-COMPONENT

ODOR

ODOR-THRESHOLD-EVALUATION-METHOD

ORGANIZATION

ORGANIZATION-SUBSTANCE-FAMILY

ORGANIZATION-SUBSTANCE-SYNONYM

PHYSICAL-CONDITION

RADIOISOTOPE

RADIOISOTOPE-DECAY-EMISSION

RADIOISOTOPE-DECAY-ISOTOPE

REGULATION

REGULATION-SUBSTANCE-FAMILY

REGULATION-SUBSTANCE-SYNONYM

SECONDARY-MATERIAL-MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION

SOLID

SUBSTANCE

SUBSTANCE-FAMILY

SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-MEMBERSHIP

SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP

SUBSTANCE-IN-SOLUTION

SUBSTANCE-MATCHING-SYNONYM

SUBSTANCE-PHYSICAL-STATE

SUBSTANCE-SOLUBILITY-DETERMINATION

SUBSTANCE-SYNONYM

SUBSTANCE-VAPOR-PRESSURE

This view is closely related to the following views:

Material Components and Ingredients

Substance Names, Families, and Other Groupings

Figure 4: PHD Logical Data Model View – Physical and Chemical Properties

Graphics placeholder – please see companion files for model view graphics.

TAB D: PHD Logical Data Model View – Substance Health and Environmental Hazards

The Substance Health and Environmental Hazards View of the PHD logical data model depicts the HAZARDs information for a SUBSTANCE as needed by:

- Personnel handling and storing the SUBSTANCE that must consider its inherently hazardous properties to be able to take appropriate precautions in conditions and incompatible substances to avoid potentially dangerous reactions;
- Health and safety professionals that need to identify the appropriate personal protective equipment for personnel involved in using the SUBSTANCE;
- Health and safety professionals, and toxicologists assessing the human health hazards or potential health effects of a SUBSTANCE;
- Environmental professionals and emergency responders involved in spill control and response;
- Health care professionals who are making decisions regarding treatment of individuals exposed to the SUBSTANCE.

The kinds of hazards depicted in this view included the following.

- HAZARD CATEGORY as established by an ORGANIZATION
- Possible routes of exposure to the substance (e.g., through skin contact, inhalation, or ingestion)
- Signs and symptoms of exposure
- Potential health effects of exposure to the substance
- Frequency or duration of exposure required to cause the effect
- Severity of each effect
- Type of effect (e.g., skin irritation, birth defect, cancer)
- Target organs affected
- Conditions that enhance the toxicity of the substance

The ANSI standard for the Material Safety Data Sheet (MSDS) includes this information in Section 11. Toxicological Information, and Section 12. Ecological Information.

The Substance Health and Environmental Hazards View of the PHD depicts the following entities:

ACCIDENTAL-RELEASE-MEASURE

ADVERSE-ENVIRONMENTAL-EFFECT

ADVERSE-HEALTH-EFFECT

ADVERSE-HEALTH-EFFECT-CATEGORY

ADVERSE-HEALTH-EFFECT-TARGET-BODY-PART

BODY-PART

CONDITION-TO-AVOID

CONDITION-TO-AVOID-SUBSTANCE

FIRST-AID-MEASURE

HAZARD

HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT

HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION

HAZARD-ADVERSE-HEALTH-EFFECT

HAZARD-ADVERSE-HEALTH-EFFECT-DETERMINATION

HAZARD-CATEGORY

HAZARD-CATEGORY-HAZARD-ASSIGNMENT

HAZARD-PERSONAL-PROTECTIVE-EQUIPMENT-SUITABILITY

NOTE-TO-PHYSICIAN

ORGANIZATION

ORGANIZATION-HAZARD-CATEGORY

PERSONAL-PROTECTIVE-EQUIPMENT

REGULATION

REGULATION-HAZARD-CATEGORY

ROUTE-OF-EXPOSURE

SIGNAL-WORD

SIGN-SYMPTOM

SUBSTANCE

SUBSTANCE-ACCIDENTAL-RELEASE-MEASURE

SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT

SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION

SUBSTANCE-ADVERSE-HEALTH-EFFECT

SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART

SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART-DETERMINATION

SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION

SUBSTANCE-AID-MEASURE

SUBSTANCE-FIRST-AID-MEASURE-DETERMINATION

SUBSTANCE-HAZARD

SUBSTANCE-HAZARD-DETERMINATION

SUBSTANCE-NOTE-TO-PHYSICIAN

SUBSTANCE-NOTE-TO-PHYSICIAN-DETERMINATION

SUBSTANCE-REACTION

SUBSTANCE-REACTION-HAZARD

SUBSTANCE-REACTION-PRECONDITION

SUBSTANCE-ROUTE-OF-EXPOSURE

SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT

SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT-DETERMINATION

SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT

SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION

SUBSTANCE-SIGNAL-WORD

SUBSTANCE-SIGNAL-WORD-DETERMINATION

SUBSTANCE-SIGN-SYMPTOM

SUBSTANCE-SIGN-SYMPTOM-DETERMINATION

This view is closely related to the following views:

Hazards Identification

Physical and Chemical Properties

Material Components and Ingredients

Figure 5: PHD Logical Data Model View – Substance Health and Environmental Hazards

Graphics placeholder – please see companion files for model view graphics.

TAB E: PHD Logical Data Model View – Material Hazards

The Material Hazards View of the PHD logical data model provides storage, safe handling, disposition, engineering controls, and general hygiene considerations that apply to the MATERIAL that is based on the information provided by the vendor or supplier of the MATERIAL.

Personnel handling and storing the MATERIAL will need to consider its inherently hazardous properties and applicable general hygiene considerations to be able to take appropriate precautions and mitigate the hazards of the MATERIAL.

After a MATERIAL has been partially or completely used, completed its shelf-life, or is no longer of use, the MATERIAL and any by-products [e.g., wastes] require disposition (e.g., recycle, recovery, disposal, treatment). Disposal considerations for MATERIALs within the PHD includes:

- Safe and environmentally preferred waste management options (e.g., disposal, recycling, or reclamation)
- Parameters that will enhance or limit the disposal options
- Hazardous waste properties of the substance
- Regulatory requirements and regulatory organization information

The ANSI standard for the Material Safety Data Sheet (MSDS) includes this information in Section 2. Hazards Identification, and Section 13. Disposal Considerations.

This view depicts the following entities:

DISPOSAL-CONSIDERATION

DISPOSAL-CONSIDERATION-CATEGORY

ENGINEERING-CONTROL

ENGINEERING-CONTROL-TYPE

GENERAL-HYGIENE-CONSIDERATION

HAZARDOUS-MATERIAL-CATEGORY

HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM

HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM

HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM-CATEGORY

MATERIAL

MATERIAL-DISPOSAL-CONSIDERATION

MATERIAL-ENGINEERING-CONTROL

MATERIAL-GENERAL-HYGIENE-CONSIDERATION

MATERIAL-HAZARDOUS-MATERIAL-CATEGORY

MATERIAL-HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM

MATERIAL-SAFE-HANDLING-PRACTICE

MATERIAL-STORAGE-PRACTICE

NONPICTOGRAM-BASED-HAZARDOUS-MATERIAL-CATEGORY

ORGANIZATION

PICTOGRAM-BASED-HAZARDOUS-MATERIAL-CATEGORY

SAFE-HANDLING-PRACTICE

STORAGE-PRACTICE

This view is closely related to the following views:

Substance Health and Environmental Hazards

Material Components and Ingredients

Figure 6: PHD Logical Data Model View – Material Hazards

Graphics placeholder – please see companion files for model view graphics.

TAB F: PHD Logical Data Model View – Substance Exposure Limits and Studies

The Substance Exposure Limits and Studies View of the PHD logic model depicts the product hazard data necessary to:

- Identify health and environmental exposure studies;
- Identify the established guidelines that limit exposure to a SUBSTANCE (e.g., IDLH; LD_{50}).

Exposure studies on a SUBSTANCE are addressed in the PHD as:

- Species that may be effected (e.g., human, fish, animal)
- Possible routes of exposure (e.g., eye, inhalation, skin)
- Results of toxicological testing (e.g., duration, conditions)

Anticipated behavior of a hazardous substances that is released to the environment, will affect the ADVERSE Environmental EFFECTs can include:

- Fate and transport in the environment
- Ecotoxicological impacts (e.g., terrestrial affects, aquatic affects)
- Persistence and degradability
- Bioaccumulation or accumulation of the substance in organisms

This view depicts the following entities:

ADVERSE-ENVIRONMENTAL-EFFECT

ADVERSE-HEALTH-EFFECT

ADVERSE-HEALTH-EFFECT-CATEGORY

EXPOSURE-STUDY

EXPOSURE-STUDY-SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT

EXPOSURE-STUDY-SUBSTANCE-ADVERSE-HEALTH-EFFECT

ORGANIZATION

SUBSTANCE

SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT

SUBSTANCE-ADVERSE-HEALTH-EFFECT

SUBSTANCE-EXPOSURE-LIMIT

SUBSTANCE-EXPOSURE-LIMIT-TYPE

UNIT-OF-MEASURE

This view is closely related to the following view:

Substance Names, Families, and Other Groupings

Figure 7: PHD Logical Data Model View – Substance Exposure Limits and Studies

Graphics placeholder – please see companion files for model view graphics.

TAB G: PHD Logical Data Model View – Substance Reactions

The Substance Reactions View of the PHD logical data model depicts the product hazard data for the reaction results and hazards associated with a SUBSTANCE. The information tracked includes the conditions that increase or decrease the likelihood that a reaction will occur, and the physical and chemical results of a reaction.

The reaction properties of the SUBSTANCE under specified conditions include:

- Chemical stability under normal handling and storage practices
- Self reactive characteristics
- Environmental and physical conditions to avoid
- Incompatible materials that would react with the product
- Kinds of reactions that can occur (e.g., polymerization, condensation, decomposition)
- Hazardous materials produced as a result of reactions

The ANSI standard for the Material Safety Data Sheet (MSDS) includes this information in Section 10. Stability and Reactivity.

It depicts the following entities:

CHEMICAL

CONDITION-TO-AVOID

CONDITION-TO-AVOID-SUBSTANCE

HAZARD

INGREDIENT

REACTION-EFFECT

STABILIZING-GROUP

STABILIZING-GROUP-SUBSTANCE

SUBSTANCE

SUBSTANCE-CONDENSATION

SUBSTANCE-HAZARD

SUBSTANCE-INCOMPATIBILE-SUBSTANCE

SUBSTANCE-REACTION

SUBSTANCE-REACTION-EFFECT

SUBSTANCE-REACTION-HAZARD

SUBSTANCE-REACTION-PRECONDITION

SUBSTANCE-REACTION-RESULTING-SUBSTANCE

SUSTANCE-STABILIZATION

This view is closely related to the following view:

Physical and Chemical Properties

Figure 8: PHD Logical Data Model View – Substance Reactions

Graphics placeholder – please see companion files for model view graphics.

TAB H: PHD Logical Data Model View – Product and Company Identification

This diagram depicts the product hazard data that identifies the materials (substances and objects) that make up a product, links the product to the document that is its Material Safety Data Sheet (MSDS), identifies the manufacturer and provider of the product, and shows their contact information.

It depicts the following entities:

ADDRESS
ACQUISITION-ELEMENT-TYPE
DOCUMENT
GEOPOLITICAL-SPATIAL-AREA
LOCATION
LOCATION-GEOPOLITICAL-SPATIAL-AREA
LOCATION-ORGANIZATION
MATERIAL
MATERIAL-DOCUMENT
MATERIAL-LOT
MATERIAL-MANUFACTURE-PERIOD
MATERIAL-MANUFACTURER
MATERIEL-ASSET
MATERIEL-CATALOG-ITEM
MATERIEL-CATALOG-ITEM-COMPONENT
MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD
MATERIEL-ELEMENT-TYPE
OBJECT
ORGANIZATION
ORGANIZATION-IDENTIFICATION
ORGANIZATION-IDENTIFICATION-TYPE
ORGANIZATION-ROLE
SUBSTANCE
SUPPLIER
SUPPLIER-MATERIEL-CATALOG-ITEM

Figure 9: PHD Logical Data Model View – Product and Company Identification

Graphics placeholder – please see companion files for model view graphics.

TAB I: PHD Logical Data Model Entities and Entity Descriptions

Table 4: PHD logical data model entities and entity descriptions

Entity Name	Entity Description
ACCIDENTAL-RELEASE-MEASURE	A way to respond to a potential spill, leak, or other unplanned discharge of some hazardous substance in order to prevent or minimize the adverse effects on persons, property, and the environment through exposure to the substance. Examples are: – Do not allow to enter drainage system, surface, or ground water. – Call 3-M-HELPS line (1-800-364-3577) for more information on handling and managing the spill. – Collect as much of the spilled material as possible. Clean up residue with water.
ADVERSE-ENVIRONMENTAL-EFFECT	A potential negative consequence, changing the state of the world at large, including both nature or constructed items, that may result from exposure to a substance.
ADVERSE-HEALTH-EFFECT	A potential negative consequence, changing the optimum functioning or well being of a person, that may result from exposure to a substance.
ADVERSE-HEALTH-EFFECT-CATEGORY	A classification that can be applied to the ADVERSE-HEALTH-EFFECTs of poisons on living creatures. Commonly used categories include Eye Effects, Skin Effects, Acute Oral Effects, Acute Inhalation Effects, Subchronic Effects, Chronic Effects, Carcinogenic Effects. Mutagenicity, Epidemiologic Effects, Teratogenic Effects, Reproductive Effects, and Neurotoxic Effects.
ADVERSE-HEALTH-EFFECT-TARGET-BODY-PART	A BODY-PART that is likely to be affected by the ADVERSE-HEALTH-EFFECT.
BODY-PART	A kind of organ or system found in human beings. For example, Liver, Kidney, Skin, Lung, and Central Nervous System.
CHEMICAL	A macroscopically homogenous SUBSTANCE that exists as such regardless of its physical state. Examples are gasoline, the secret ingredient in a popular soft drink, and depleted Uranium alloy.
CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM	An assignment by the Chemical Abstract Service (CAS) to designate, at any given time, exactly one CHEMICAL. Over time, the same registry item can have been re assigned to another CHEMICAL. Therefore, over time, the same CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM may apply to more than one CHEMICAL, and the same CHEMICAL can be identified as more than one CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM.
CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM-ASSIGNMENT	A designation of a CHEMICAL as a CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM.
CHEMICAL-COMPOUND	A CHEMICAL consisting entirely of molecules consisting of more than one bonded atom, each molecule having the same number of atoms of a given atomic number, and each having those atoms bonded and arranged within the molecule in the same way. Distinct isomers, such as dextrose and levulose, are separate CHEMICAL-COMPOUNDs for example, m-Xylene; o-Xylene.
CHEMICAL-COMPOUND-ELEMENT	The inclusion of one or more atoms of the relevant CHEMICAL-ELEMENT within a molecule of the relevant CHEMICAL-COMPOUND.
CHEMICAL-ELEMENT	A CHEMICAL consisting entirely of unbonded atoms, each having the same number of protons in the atom's nucleus.
CHEMICAL-ELEMENT-OXIDATION-STATE	A SUBSTANCE consisting entirely of ions of one CHEMICAL-ELEMENT, each having donated or received the same number of electrons during its ionization. For example, the CHEMICAL-

Entity Name	Entity Description
	ELEMENT-OXIDATION-STATE Hexavalent Chromium (Chromium VI) has donated six electrons during ionization; therefore, it has an oxidation state of +6 .
COMBINATION-SUBSTANCE	A SUBSTANCE that has direct constituents of other SUBSTANCEs that retain their own chemical properties and makeup as before they were included in the COMBINATION-SUBSTANCE. Physical properties of a COMBINATION-SUBSTANCE, e.g., the melting point, may differ considerably from those of its constituents. Included are mixtures, alloys, emulsions, suspensions, colloids, nanoparticle matrixes, solutions, and combinations of isomers having the same molecular formula. Examples are gasoline, air, freeze dried Neapolitan ice cream, a slurry of wood chips in oil, stainless steel, Toluene and water, Xylene (mixed isomers).
CONDITION-TO-AVOID	A kind of circumstance applicable to the use, storage, or transportation of substances that might result in a hazardous situation, and therefore should be avoided.
CONDITION-TO-AVOID-SUBSTANCE	A CONDITION-TO-AVOID that applies to a SUBSTANCE.
CONTAINING-COMPONENT	An OBJECT-COMPONENT that acts, at least in part, as a vessel for at least one other OBJECT-COMPONENT when such an item will be received, not as it might exist during or after use, creative maintenance, or repair for example, the 55 gallon drum of a drum of green paint. Note: A MATERIAL can act as a CONTAINING-COMPONENT of one OBJECT and also act as a NON-CONTAINING-COMPONENT of a second OBJECT. For example, the MATERIAL Bottle is a CONTAINING-COMPONENT of the OBJECT Bottle-of-orange-soda. The MATERIAL Bottle also is a NON-CONTAINING-COMPONENT of the OBJECT 24-pack-of-emptied-bottles, a waste or byproduct OBJECT.
DISPOSAL-CONSIDERATION	Information that is relevant to and will assist in determining the safe and environmentally preferred waste management options for the elimination, recycling, or reclamation of MATERIALs.
DISPOSAL-CONSIDERATION-CATEGORY	A classification that can be applied to information about waste management options.
DOCUMENT	Recorded information regardless of physical form.
ENGINEERING-CONTROL	A mechanical method or procedure suitable for reducing or controlling hazardous exposure to a person, creature, plant, property, or the environment during use of one more MATERIALs. For example, a technique for using ventilation to minimize the exposure to a product.
ENGINEERING-CONTROL-TYPE	A kind of mechanical method or procedure suitable for reducing or controlling hazardous exposure to a person, creature, plant, property, or the environment during use of a material. Examples include: Ventilation, Barriers, and Laboratory Hood.
EXPOSURE-STUDY	A scientifically conducted empirical evaluation of the consequences of the direct or indirect contact with one or more relevant SUBSTANCEs by persons, other living creatures, and the world at large, including both nature and constructed items.
EXPOSURE-STUDY-SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT	A SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT evaluated by an EXPOSURE-STUDY.
EXPOSURE-STUDY-SUBSTANCE-ADVERSE-HEALTH-EFFECT	A SUBSTANCE-ADVERSE-HEALTH-EFFECT evaluated by an EXPOSURE-STUDY.
FIRST-AID-MEASURE	A technique of emergency treatment for administering to a person exposed to a hazardous substance.
FLASH-POINT-EVALUATION-METHOD	A technique that is suitable for determining the temperature at which a material gives off a vapor in sufficient concentration to ignite. Examples include: Cleveland Open Cup, Tagliabue Closed Cup, Pensky-Martens Closed Cup, and Setaflash Closed Cup.

Entity Name	Entity Description
GAS	A SUBSTANCE that is in a form that exhibits very low density and viscosity, relatively great expansion and contraction with changes in pressure and temperature, the ability to diffuse readily, and the spontaneous tendency to become distributed uniformly throughout any container.
GENERAL-HYGIENE-CONSIDERATION	A widely-applicable technique or approach for maintaining a wholesome and sanitary environment.
GRANULATED-SOLID	A SOLID that consists of small solid particles, each having a size, shape, and micro structure.
HAZARD	A kind of negative effect potentially resulting from exposure of persons, animals, plants, structures, property, equipment, or the environment to a substance or its effects.
HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT	A specific HAZARD that has been determined to be able to cause a specific ADVERSE-ENVIRONMENTAL-EFFECT.
HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION	An official establishment of the existence of an HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION.
HAZARD-ADVERSE-HEALTH-EFFECT	A specific HAZARD that has been determined to be able to cause a specific ADVERSE-HEALTH-EFFECT.
HAZARD-ADVERSE-HEALTH-EFFECT-DETERMINATION	An official establishment of the existence of a HAZARD-ADVERSE-HEALTH-EFFECT.
HAZARD-CATEGORY	An officially established classification that can apply to a HAZARD.
HAZARD-CATEGORY-HAZARD-ASSIGNMENT	A HAZARD that has been established to fall within the HAZARD-CATEGORY.
HAZARD-PERSONAL-PROTECTIVE-EQUIPMENT-SUITABILITY	The appropriateness of using the relevant PERSONAL-PROTECTIVE-EQUIPMENT to mitigate the effect of the relevant HAZARD.
HAZARDOUS-MATERIAL-CATEGORY	A class within the relevant HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM	A standardized scheme for categorizing materials (not hazards) according to the probability that they will burn, explode, or exhibit other negative physical effect under a predictable set of circumstances. Among these schemes are - the (international) National Fire Protection Association (NFPA) Section 704 Hazard Identification System, - the Hazardous Material Identification Guide (HMIG) system, and - the Hazardous Material Information System (HMIS), and the (United States) Department of Transformation (DOT) system. Note: Because the contents of a HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM can change dramatically between versions, a new version is treated an entirely new HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	An icon that graphically depicts a valid combination of low level categories within the relevant HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM-CATEGORY	A PICTOGRAM-BASED-HAZARDOUS-MATERIAL-CATEGORY that is displayed in a HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM.
INGREDIENT	A SUBSTANCE that is a direct constituent of another SUBSTANCE. For example, SUBSTANCE water is an INGREDIENT of SUBSTANCE 95% solution of Isopropyl Alcohol. SUBSTANCE Sodium Chloride is an INGREDIENT of SUBSTANCE saline solution. Elemental Tin is an INGREDIENT of pewter. Copper Oxide is an INGREDIENT of green paint. Note: A SUBSTANCE that is used in the manufacture of a second SUBSTANCE, but which does not retain its original molecular characteristics in the manufactured SUBSTANCE, is not a direct constituent.
INGREDIENT-PERCENTAGE	A comparative extent that the relevant INGREDIENT contributes to the relevant overall SUBSTANCE. The percentage may be for one end of a range of allowable percentages. For example, the percentage of Sodium Chloride in saline solution might be at least 3% by weight. Note

Entity Name	Entity Description
	that the sum of the INGREDIENT-PERCENTAGEs for all INGREDIENTs of a SUBSTANCE may total more than 100% since overlapping INGREDIENTs may be identified for the same SUBSTANCE. For example, the Toluene may make up 60% of a SUBSTANCE, Xylene may make of 40% of the same SUBSTANCE, and Carbon-14 may make up 3% of the SUBSTANCE.
INGREDIENT-PERCENTAGE-TRADE-SECRET	The official recognition in a TRADE-SECRET that the comparative extent of an INGREDIENT is proprietary to (known in detail by only) the manufacturer of the relevant SUBSTANCE and to others whom the holder of the TRADE-SECRET designates to know those details.
INGREDIENT-TRADE-SECRET	The official recognition in a TRADE-SECRET that the use of an INGREDIENT is proprietary to (known in detail by only) the manufacturer of the SUBSTANCE containing the INGREDIENT and to others whom the holder of the TRADE-SECRET specifically designates to know those details.
INGREDIENT-TRADE-SECRET-SUBSTANCE-NAME	A SUBSTANCE-SYNONYM used to identify a SUBSTANCE whose use as an INGREDIENT is identified as proprietary in the relevant TRADE-SECRET.
INSEPARABLE-OBJECT	An OBJECT that consists only of one or more component parts that are not easily detachable, and that retain their distinct character before, during, and after use. Typically, an INSEPARABLE-OBJECT is used as a container, A device, or a tool.
ISOTOPE	A SUBSTANCE consisting entirely of atoms of one CHEMICAL-ELEMENT having the same number of neutrons in each atoms' nucleus.
LIQUID	A SUBSTANCE that is in a form that exhibits readiness to flow, little or no tendency to disperse, and relatively low compressibility.
MATERIAL	A kind of distinctly identifiable physical matter about which the DoD wants to track information. Examples include gasoline, friable asbestos, hexavalent chromium, dry ice, the secret ingredient in a popular soft drink, a D battery, a depleted Uranium alloy, Coca Cola in a 12 oz Aluminum can, a 12 oz Aluminum can, a 5 gal can of eggshell white latex paint, a specific batch of jet fuel, and a six-pack of 16-oz bottles of ACME Orange Soda.
MATERIAL-DISPOSAL-CONSIDERATION	A DISPOSAL-CONSIDERATION that is relevant to the elimination, recycling, or reclamation of the relevant MATERIAL.
MATERIAL-DOCUMENT	A DOCUMENT that applies to a MATERIAL.
MATERIAL-ENGINEERING-CONTROL	An ENGINEERING-CONTROL that can be employed when using the related MATERIAL.
MATERIAL-FLASH-POINT-EVALUATION	A determination for the related MATERIAL of the minimum temperature at which the MATERIAL gives off a vapor in sufficient concentration to ignite. If the MATERIAL is a CHEMICAL-COMBINATION, it may have several flash points, the lowest one being for the INGREDIENT with that will ignite first, the second lowest being for the INGREDIENT that will ignite next after all of the first INGREDIENT has burned off or otherwise vaporized out of the CHEMICAL-COMBINATION, and so forth.
MATERIAL-GENERAL-HYGIENE-CONSIDERATION	A GENERAL-HYGIENE-CONSIDERATION that is applicable to a MATERIAL.
MATERIAL-HAZARDOUS-MATERIAL-CATEGORY	A NON-PICTOGRAM-BASED-HAZARDOUS-MATERIAL-CATEGORY that is applicable to the relevant MATERIAL.
MATERIAL-HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	A HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM that depicts all the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM-CATEGORYs that are applicable to the relevant MATERIAL.
MATERIAL-LOT	A separable quantity of MATERIAL (either a quantity of a SUBSTANCE (such as jet fuel) or a

Entity Name	Entity Description
	group of individual OBJECTs (such as canned meat) that were created at the same time in the same way with the same components, therefore, having potentially identical characteristics that might vary from those of another such group. For a SUBSTANCE, such a group is typically called a batch. For an OBJECT, such a group is typically called a lot. Some individual OBJECTs, such as cans of paint are grouped according to the batch contained therein.
MATERIAL-MANUFACTURE-PERIOD	A contiguous time when the relevant ORGANIZATION is approved, authorized, or acknowledged to create the relevant MATERIAL.
MATERIAL-MANUFACTURER	The approved, authorized, or acknowledged creation of a MATERIAL by an ORGANIZATION.
MATERIAL-MATERIEL-HAZMAT-TYPE	A material associated with a code which describes its hazardous nature.
MATERIAL-MISCELLANEOUS-PROPERTY	A scientifically verified and officially established MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY of a MATERIAL.
MATERIAL-ODOR-THRESHOLD-EVALUATION	A determination of the lowest concentration of a MATERIAL's vapor in air that necessary for it to be smelled by a typical healthy person who can smell it at some level of concentration. The odor threshold may be used in evaluating a MATERIAL’s warning properties. For example, a MATERIAL with good warning properties has an odor threshold less than 1/10% of the exposure limit. Conversely, MATERIALs with poor warning properties have odor thresholds 3 times or more the exposure limit.
MATERIAL-SAFE-HANDLING-PRACTICE	A SAFE-HANDLING-PRACTICE applicable to a MATERIAL.
MATERIAL-STORAGE-PRACTICE	A STORAGE-PRACTICE that applies to a MATERIAL.
MATERIAL-TEMPERATURE-THRESHOLD	An upper or lower limit to the internal heat of a MATERIAL that causes that MATERIAL to change state (i.e., to a liquid, solid, or gas) or to have changed its susceptibility to certain chemical reactions when held at standard pressure. Examples are Melting Point, Freezing Point, Initial Boiling Point, Final Boiling Point (for a mixture), Autoignition Temperature, and Decomposition Point.
MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD	A contiguous time when the characteristics of the related MATERIAL are approved, authorized, or acknowledged to encompass the characteristics set forth in related MATERIEL-CATALOG-ITEM.
MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY	A characteristic that can apply to a MATERIAL and that is not tracked in a more specific representation elsewhere in the relevant data base's data structure. Possible examples include pour point, corrosion rate, and heat value.
MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	A PHYSICAL-CONDITION that applies to a MATERIAL that is involved in the related MATERIAL-MISCELLANEOUS-PROPERTY.
NON-CONTAINING-COMPONENT	A OBJECT-COMPONENT that does not act, at least in part, as a vessel for at least one other direct OBJECT-COMPONENT of the relevant OBJECT when such an item will be received, not as it might exist during or after use, creative maintenance, or repair for example, the green paint within a drum of green paint, a plastic label on a drum of green paint, a lead seal on a munitions container, a rope that ties parts of an OBJECT together when it is received, or crumpled tissue used as insulating and cushioning material for fruit in a box of fruit. Note: A MATERIAL can act as a NON-CONTAINING-COMPONENT of one OBJECT and also act as a CONTAINING-COMPONENT of a second OBJECT.
NONPICTOGRAM-BASED-HAZARDOUS-MATERIAL-CATEGORY	A HAZARDOUS-MATERIAL-CATEGORY that is not based on the use of a graphical means to depict the natures of the hazards of the relevant MATERIALs.
NOTE-TO-PHYSICIAN	Special information for health care professionals on how to treat persons exposed to a relevant

Entity Name	Entity Description
	SUBSTANCE. Included is relevant information on antidotes, specific treatments, diagnostic procedures outside of usual and customary practices administered by health care professionals, clinical testing, medical monitoring for delayed effects, and procedures that may be affected by pre-existing medical conditions and involve a medical judgment.
OBJECT	A MATERIAL that is inherently limited in extent. That is, it is a kind of discrete item, such as a D battery, a 55 gallon drum of green paint, or a 10 oz ball of C4 explosive, 12 oz Coca Cola in an Aluminum Can, an Aluminum Can (with 1 compartment), a Steel Can (with 3 compartments), 6 pack of 12 Oz Coca Cola in an Aluminum Can.
OBJECT-COMPONENT	A direct and clearly distinct constituent of the related OBJECT as such an item will be received, not as it might exist after creative maintenance and repair for example, the green paint in a 55 gallon drum of green paint, a specific kind of mother board on a specific kind of lap top computer, a large crow bar in a tank repair tool kit, the 55 gallon drum in a 55 gallon drum of green paint, the 12 oz can of Coca Cola in a 6-pack, or the plastic ring holding a 6-pack of Coca Cola's together. Note: If the parent OBJECT is a kit, each kit child OBJECT will be identified by the Object_Component_Material_Identifier.
ODOR	A way that something can smell.
ODOR-THRESHOLD-EVALUATION-METHOD	A technique that is suitable for determining the lowest concentration of a MATERIAL's vapor in air that is necessary for the MATERIAL to be smelled by a typical healthy person who can smell it at some level of concentration. An example is, the Triangle Odor Bag Method.
ORGANIZATION-HAZARD-CATEGORY	A HAZARD-CATEGORY established by a specific ORGANIZATION.
ORGANIZATION-SUBSTANCE-FAMILY	A SUBSTANCE-FAMILY that is made by an ORGANIZATION.
ORGANIZATION-SUBSTANCE-SYNONYM	A SUBSTANCE-SYNONYM established by a specific ORGANIZATION.
PACKAGING-TYPE	A category that can be applied to a container, receptacle, or vessel within which can be placed a SUBSTANCE, an OBJECT, or a set of identical or otherwise related OBJECTs.
PERSONAL-PROTECTIVE-EQUIPMENT	A kind of clothing or other gear that can be worn or held by a person to protect the person from one or more risks to his or her health or safety by reducing direct contact with or indirect effects of SUBSTANCEs and their INGREDIENTs while working with those substances.
PHYSICAL-CONDITION	A characteristic of that can be required of a MATERIAL for the determination of one of its MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTYs. For example, a PHYSICAL-CONDITION might be a particular value for the temperature or pressure that must be held constant for a particular MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY value to be valid. Standard Temperature (70 Degrees Fahrenheit) and Standard Temperature (1 Atmosphere) are PHYSICAL-CONDITIONs that apply to many MATERIALs that have MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTYs.
PICTOGRAM-BASED-HAZARDOUS-MATERIAL-CATEGORY	A HAZARDOUS-MATERIAL-CATEGORY that is based on the use of a graphical means to depict the natures of the hazards of the relevant MATERIALs.
RADIOISOTOPE	An ISOTOPE that undergoes spontaneous nuclear disintegration.
RADIOISOTOPE-DECAY-EMISSION	A kind of subatomic matter or energy packet that is ejected during the spontaneous nuclear disintegration of the relevant RADIOISOTOPE.
RADIOISOTOPE-DECAY-ISOTOPE	An ISOTOPE created when the RADIOISTOPE undergoes spontaneous nuclear disintegration.
REACTION-EFFECT	A condition, other than the generation of a new SUBSTANCE (or new ISOTOPE), that can result

Entity Name	Entity Description
	from a SUBSTANCE-REACTION (or RADIOISOTOPE decay).
REGULATION	A mandatory requirement established by a government agency (e.g., local, state, national, or international organization) that exerts certain controls on a federal agency or private organization's actions, property, or data, located in a geographic area, during a specific period of time. For example, Title 49, U.S. Code of Federal Regulations (CFR) Part 173 specifies containers and means of transport of hazardous materials (within the Defense Transportation System). DoD regulation 4500.9-R, Defense Transportation Regulation, contains the mandatory requirements that apply to DoD's shipments.
REGULATION-HAZARD-CATEGORY	A HAZARD-CATEGORY established by a specific REGULATION.
REGULATION-REQUIREMENT	A REGULATION-established responsibility that governs the tracking or use of one or more SUBSTANCEs or groups of SUBSTANCEs.
REGULATION-SUBSTANCE-FAMILY	A SUBSTANCE-FAMILY that is established by a REGULATION.
REGULATION-SUBSTANCE-SYNONYM	A SUBSTANCE-SYNONYM established by a specific REGULATION.
ROUTE-OF-EXPOSURE	A way that a substance can make contact with a person's body. Examples are Eye Contact, Skin Contact, Inhalation, and Ingestion.
SAFE-HANDLING-PRACTICE	A precautionary technique suitable for moving or manipulating hazardous materials to minimize the adverse effects on persons, property, and the environment through exposure to the materials. Examples are: – Keep ignition sources away -- Do not smoke. – Containers, even those that have been emptied, can contain vapors. Do not cut, drill grind, weld, or perform similar operations on or near empty containers.
SECONDARY-MATERIAL-MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	A MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION that applies to a MATERIAL other than the one for which the MATERIAL-MISCELLANEOUS-PROPERTY has been determined.
SIGN-SYMPTOM	A potential phenomenon that can be experienced by a person as a departure from normal function, sensation, or appearance that is known or thought to indicate disorder or disease resulting from exposure to a hazardous substance.
SIGNAL-WORD	A short term suitable to designate the overall hazardous nature and the level of hazard seriousness of one or more SUBSTANCEs.
SOLID	A SUBSTANCE that is in a form that has definite shape and volume at standard temperature and pressure.
STABILIZING-GROUP	A set of one or more SUBSTANCEs that can inhibit one or more SUBSTANCE-REACTIONs of another SUBSTANCE under normal circumstances.
STABILIZING-GROUP-SUBSTANCE	A SUBSTANCE that belongs to the relevant STABILIZING-GROUP.
STORAGE-PRACTICE	A precautionary technique suitable for containing or stocking hazardous materials to minimize the adverse effects on persons, property, and the environment through exposure to the materials. Examples are: – Store away from acids. – Keep container tightly closed.
SUBSTANCE	A MATERIAL having no inherent limit in extent; therefore without size or shape for example, green paint, hydrochloric acid, dry ice, or Coca Cola syrup.
SUBSTANCE-ACCIDENTAL-RELEASE-MEASURE	An ACCIDENTAL-RELEASE-MEASURE that applies to a spilled, leaked, or otherwise discharged

Entity Name	Entity Description
	SUBSTANCE.
SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT	An ADVERSE-ENVIRONMENTAL-EFFECT that that has been determined can result from exposure of the world at large, including both nature and constructed items, to the SUBSTANCE.
SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION	The official establishment of the existence of a SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT.
SUBSTANCE-ADVERSE-HEALTH-EFFECT	A scientifically determined consequence, changing the optimum functioning or well being of living creatures, resulting from exposure to the relevant SUBSTANCE.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART	A BODY-PART subject to an ADVERSE-HEALTH-EFFECT because of direct or indirect exposure to a SUBSTANCE.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART-DETERMINATION	An official establishment of the existence of a SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION	An official establishment of the existence of a SUBSTANCE-ADVERSE-HEALTH-EFFECT.
SUBSTANCE-AID-MEASURE	A FIRST-AID-MEASURE that has been determined to be potentially needed as the result of a person's exposure to the relevant SUBSTANCE.
SUBSTANCE-CONDENSATION	A SUBSTANCE-REACTION during which at least one molecule of the SUBSTANCE interacts with at least one other molecule (perhaps of the same SUBSTANCE) through a series of addition and elimination steps that result in the generation of a large molecular weight SUBSTANCE and water (or, if not water, some other small molecular substance, such as ammonia or hydrogen sulfide). For example, the condensation of acetaldehyde, through a set of intermediate steps, ultimately into crotonaldehyde.
SUBSTANCE-EXPOSURE-LIMIT	A recommended maximum to the amount of direct contact by a person to the relevant SUBSTANCE. The ORGANIZATION that promulgates the recommendation would typically be a governmental organization, such as a U.S. federal agency, a U.S. State government organization, a local government, a nongovernmental agency, or a manufacturer, but it could be any reputable organization with credibility.
SUBSTANCE-EXPOSURE-LIMIT-TYPE	A kind of threshold that can apply to a SUBSTANCE-EXPOSURE-LIMIT as established by a specific ORGANIZATION. Standard threshold types are for: - OSHA permissible exposure limit (PEL) as a time weighted average (TWA) of concentration of a substance for an 8-hour day of exposure; - OSHA PEL as a ceiling (C) or peak value that should never be exceeded; - OSHA short term exposure (STEL) of no more than 15 minutes at a time and no more than 60 minutes in a day; - NIOSH recommended exposure limit (REL) as a TWA for a normal working lifetime; and - NIOSH immediately dangerous to life or health (IDLH) limit, an atmospheric chemical concentration that is likely to cause death, permanent adverse health effects of prevent escape.
SUBSTANCE-FAMILY	A group of SUBSTANCEs that 1) exhibit similar physical properties and react similarly under similar conditions, or 2) have been established as a group by law, regulation, organizational fiat, or historical usage.
SUBSTANCE-FAMILY-INCOMPATIBLE-SUBSTANCE-FAMILY	A set of two SUBSTANCE-FAMILYs such that SUBSTANCE within one SUBSTANCE-FAMILY can react with any SUBSTANCE within the other SUBSTANCE-FAMILY to produce a hazardous situation.
SUBSTANCE-FAMILY-REGULATION-	A REGULATION-established responsibility that governs the tracking or use of SUBSTANCEs in the

Entity Name	Entity Description
REQUIREMENT	related SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-MEMBERSHIP	An inclusion or exclusion of a SUBSTANCE-FAMILY inside another SUBSTANCE-FAMILY. An exclusion over rides an inclusion. That is, all the SUBSTANCEs that are members of an excluded SUBSTANCE-FAMILY remain excluded even if such a SUBSTANCE is a member of a different included SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	An inclusion or exclusion of a SUBSTANCE inside a SUBSTANCE-FAMILY. The exclusion of a SUBSTANCE from a SUBSTANCE-FAMILY is absolute during the time covered by the membership. That is, if a SUBSTANCE has an instance of a SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP that excludes it from being inside a SUBSTANCE-FAMILY, then the SUBSTANCE is not part of that SUBSTANCE-FAMILY. No exceptions! This is true even if 1) a separate instance of SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP includes the SUBSTANCE in a second SUBSTANCE-FAMILY and 2) the second SUBSTANCE-FAMILY is included as part of the first SUBSTANCE-FAMILY through an instance of SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-MEMBERSHIP.
SUBSTANCE-FIRST-AID-MEASURE-DETERMINATION	An officially established SUBSTANCE-FIRST-AID-MEASURE.
SUBSTANCE-HAZARD	A HAZARD that has been determined to potentially result from the direct or indirect contact of persons, animals, plants, structures, property, equipment, or the environment to the relevant SUBSTANCE.
SUBSTANCE-HAZARD-DETERMINATION	An official establishment of the existence of a SUBSTANCE-HAZARD.
SUBSTANCE-IN-SOLUTION	A SUBSTANCE that is dissolved within another SUBSTANCE in liquid form. The dissolved SUBSTANCE is called the solute. The LIQUID within which the solute is dissolved is called the solvent.
SUBSTANCE-INCOMPATIBILE-SUBSTANCE	A set of two Substances that can react together to produce a hazardous situation.
SUBSTANCE-INCOMPATIBLE-SUBSTANCE-FAMILY	A SUBSTANCE that can react with any member of a SUBSTANCE-FAMILY to cause a hazardous reaction.
SUBSTANCE-MATCHING-SYNONYM	A SUBSTANCE-SYNONYM used to identify a SUBSTANCE. A SUBSTANCE may have an instance of SUBSTANCE-MATCHING-SYNONYM for many SUBSTANCE-SYNONYMs. For example, methyl isobutyl keytone, hexone, 4-methyl-2-pentanone, isobutyl methyl keytone, isopropylacetone, MIBK, and MIK are all terms that refer to the same substance.
SUBSTANCE-NOTE-TO-PHYSICIAN	A NOTE-TO-PHYSICIAN that has been determined to apply to treating someone exposed to the relevant SUBSTANCE.
SUBSTANCE-NOTE-TO-PHYSICIAN-DETERMINATION	An officially established SUBSTANCE-NOTE-TO-PHYSICIAN.
SUBSTANCE-PHYSICAL-STATE	A SUBSTANCE with only one basic observable structure. That is, a SUBSTANCE that is entirely in the form of a gas, liquid, solid, or plasma at standard temperature and pressure or other specified temperature or pressure. Examples include gaseous carbon dioxide, dry ice (solid carbon dioxide), friable asbestos, and heavy water.
SUBSTANCE-REACTION	A kind of chemical change or transformation whereby a SUBSTANCE decomposes, combines with one or more other SUBSTANCEs, or interchanges constituents with one or more other SUBSTANCEs. Examples are

Entity Name	Entity Description
	– the decomposition of benzyl peroxide into benzoic acid, benzene, carbon dioxide, and other substances, – the condensation of acetaldehyde, through a set of intermediate steps, ultimately into crotonaldehyde.
SUBSTANCE-REACTION-EFFECT	A REACTION-EFFECT that can result from a SUBSTANCE-REACTION.
SUBSTANCE-REACTION-HAZARD	A HAZARD that has been determined to potentially result from the direct or indirect contact of persons, animals, plants, structures, property, equipment, or the environment to the relevant SUBSTANCE-REACTION.
SUBSTANCE-REACTION-PRECONDITION	A CONDITION-TO-AVOID that is necessary for the relevant SUBSTANCE-REACTION to happen.
SUBSTANCE-REACTION-RESULTING-SUBSTANCE	A SUBSTANCE that results from a SUBSTANCE-REACTION.
SUBSTANCE-REGULATION-REQUIREMENT	A REGULATION-established responsibility that governs the tracking or use of the related SUBSTANCE.
SUBSTANCE-ROUTE-OF-EXPOSURE	A ROUTE-OF-EXPOSURE that has been determined to be a way that the relevant SUBSTANCE can enter a person's body.
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT	An ADVERSE-HEALTH-EFFECT that has been determined to potentially result from a entry of the relevant SUBSTANCE into a person's BODY-PART through the relevant ROUTE-OF-EXPOSURE.
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT-DETERMINATION	An officially established SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT	A piece of PERSONAL-PROTECTIVE-EQUIPMENT that is suitable to reduce exposure to the relevant SUBSTANCE of persons through a relevant ROUTE-OF-EXPOSURE.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION	An officially established SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT.
SUBSTANCE-SIGN-SYMPTOM	A SIGN-SYMPTOM that has been determined to possibly result from exposure of a person to a SUBSTANCE.
SUBSTANCE-SIGN-SYMPTOM-DETERMINATION	An officially established SUBSTANCE-SIGN-SYMPTOM.
SUBSTANCE-SIGNAL-WORD	A SIGNAL-WORD that is applicable to a SUBSTANCE.
SUBSTANCE-SIGNAL-WORD-DETERMINATION	An officially established SUBSTANCE-SIGNAL-WORD
SUBSTANCE-SOLUBILITY-DETERMINATION	The official establishment of the mass of the solute SUBSTANCE contained in a unit volume of liquid solvent which is in equilibrium with an excess of the solute. That is, each time a molecule of the solute enters the solution, another one leaves the solution. Under these conditions, the solution is said to be saturated. Solubility varies with the temperature of the solute and solvent, which is always the same for both. The solute can be a solid or a gas. If the solute is a GAS, the solubility is the ratio of the concentration of the GAS in the solution to the concentration of the GAS above the solution. In this case, the solubility also varies with the pressure of the GAS above the solution.
SUBSTANCE-SYNONYM	A name or other character string that can be used to designate a SUBSTANCE.
SUBSTANCE-TRADE-SECRET	The official recognition in a TRADE-SECRET that the existence of a relevant SUBSTANCE is proprietary to (known in detail by only) the manufacturer of the SUBSTANCE and to others whom the holder of the TRADE-SECRET specifically designates to know those details.
SUBSTANCE-TRADE-SECRET-SUBSTANCE-NAME	A SUBSTANCE-SYNONYM used to identify a SUBSTANCE whose existence is, itself, proprietary, as identified in the relevant TRADE-SECRET.
SUBSTANCE-VAPOR-PRESSURE	A measure of the tendency of a solid or liquid SUBSTANCE to become vapor at given temperature.

Entity Name	Entity Description
	The measure is the force per unit area exerted by the gaseous form of a SUBSTANCE that is at equilibrium over a liquid or solid version of the SUBSTANCE when it is held in a closed container at a specified temperature.
SUSTANCE-STABILIZATION	A SUBSTANCE that has its SUBSTANCE-REACTIONs inhibited by the inclusion of one or members of the relevant STABILIZING-GROUP.
TRADE-SECRET	The official recognition by an appropriate governmental or governmentally sponsored organization that relevant SUBSTANCEs or uses of the SUBSTANCEs have met the governmental requirements to be considered to be proprietary. In other words, the SUBSTANCEs are recognized as part or all of a secret formula of a chemical compound or mixture that the holder of the secret does not wish to be known to others, particularly competitors.
UNIT-OF-MEASURE	A scale employed to describe a dimension, quality, or capacity determined by measuring. Example of units of measure include: Feet; Inch; Square Foot; Yard; Gallon; Centimeter.

TAB J: PHD Logical Data Model Entities and Attributes

Table 5: PHD logical data model entity name, attribute name, attribute description

Entity Name	Attribute Name	Attribute Description
ACCIDENTAL-RELEASE-MEASURE	Accidental_Release_Measure_Identifier	A designator of exactly one ACCIDENTAL-RELEASE-MEASURE.
ACCIDENTAL-RELEASE-MEASURE	Accidental_Release_Measure_Details_Text	A thorough description of the ACCIDENTAL-RELEASE-MEASURE.
ACCIDENTAL-RELEASE-MEASURE	Accidental_Release_Measure_Name	A commonly understood term for the ACCIDENTAL-RELEASE-MEASURE.
ACCIDENTAL-RELEASE-MEASURE	Accidental_Release_Measure_Predefined_Indicator	A character string that identifies the ACCIDENTAL-RELEASE-MEASURE as either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related SUBSTANCE).
ACCIDENTAL-RELEASE-MEASURE	Accidental_Release_Measure_Summary_Text	A brief description of the ACCIDENTAL-RELEASE-MEASURE.
ADVERSE-ENVIRONMENTAL-EFFECT	Adverse_Environmental_Effect_Details_Text	A thorough description of the ADVERSE-ENVIRONMENTAL-EFFECT.
ADVERSE-ENVIRONMENTAL-EFFECT	Adverse_Environmental_Effect_Identifier	A designator of exactly one ADVERSE-ENVIRONMENTAL-EFFECT.
ADVERSE-ENVIRONMENTAL-EFFECT	Adverse_Environmental_Effect_Name	A commonly understood term for the ADVERSE-ENVIRONMENTAL-EFFECT.
ADVERSE-ENVIRONMENTAL-EFFECT	Adverse_Environmental_Effect_Predefined_Indicator	A character string that identifies the ADVERSE-ENVIRONMENTAL-EFFECT as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related ADVERSE-ENVIRONMENTAL-EFFECT).
ADVERSE-ENVIRONMENTAL-EFFECT	Adverse_Environmental_Effect_Summary_Text	A brief description of the ADVERSE-ENVIRONMENTAL-EFFECT.
ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Details_Text	A thorough description of the ADVERSE-HEALTH-EFFECT. For example, Prolonged exposure may cause moderate skin irritation. May cause drying/defatting of the skin.
ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT.
ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Name	A commonly understood term for the ADVERSE-HEALTH-EFFECT. For example, Moderate skin irritation.
ADVERSE-HEALTH-	Adverse_Health_Effect_Predefined_Indicator	A character string that identifies the ADVERSE-HEALTH-EFFECT

Entity Name	Attribute Name	Attribute Description
EFFECT		as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related ADVERSE-HEALTH-EFFECT).
ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Summary_Text	A brief description of the ADVERSE-HEALTH-EFFECT. For example, Prolonged exposure may cause moderate skin irritation.
ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Type_Name	A commonly understood term for the kind of ADVERSE-HEALTH-EFFECT in the sense of its general duration, intensity, and requirements for recovery. Options are Acute (if the effect usually occurs rapidly as a result of short term exposure--typically, an acute effect is quick to emerge, has intense symptoms, and typically requires intervention to achieve recovery), Chronic (if the effect results from long-term exposure or is a persistent effect resulting from a short-term exposure--typically, a chronic effect is relatively prolonged, continuing, or lingering). Effects that otherwise would be acute, but intervention is not necessarily required for recovery are considered to be Acute
ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Category_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT-CATEGORY.
ADVERSE-HEALTH-EFFECT-CATEGORY	Adverse_Health_Effect_Category_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT-CATEGORY.
ADVERSE-HEALTH-EFFECT-CATEGORY	Adverse_Health_Effect_Category_Details_Text	A thorough explanation of the ADVERSE-HEALTH-EFFECT-CATEGORY.
ADVERSE-HEALTH-EFFECT-CATEGORY	Adverse_Health_Effect_Category_Name	A commonly understood term for the ADVERSE-HEALTH-EFFECT-CATEGORY.
ADVERSE-HEALTH-EFFECT-CATEGORY	Adverse_Health_Effect_Category_Predefined_Indicator	A character string that identifies the ADVERSE-HEALTH-EFFECT-CATEGORY as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related SUBSTANCE-ADVERSE-HEALTH-EFFECT).
ADVERSE-HEALTH-EFFECT-CATEGORY	Adverse_Health_Effect_Category_Summary_Text	A brief explanation of the ADVERSE-HEALTH-EFFECT-CATEGORY.
ADVERSE-HEALTH-EFFECT-TARGET-BODY-PART	Adverse_Health_Effect_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT.
ADVERSE-HEALTH-EFFECT-TARGET-BODY-PART	Target_Body_Part_Name	A commonly-used term for the BODY-PART likely to be affected. For example, Liver, Kidney, Skin, Lung, and Central Nervous System.
BODY-PART	Body_Part_Name	A commonly-used term for the BODY-PART. For example, Liver, Kidney, Skin, Lung, and Central Nervous System.
CHEMICAL	Chemical_Identifier	A designator of exactly one CHEMICAL.
CHEMICAL	Chemical_Type_Name	A commonly understood term for the fundamental nature of the CHEMICAL. Options include: Chemical Compound for a

Entity Name	Attribute Name	Attribute Description
		CHEMICAL that contains only identical molecules (except for irrelevant isotopic variations) and Chemical Element for a CHEMICAL that consists of unbonded atoms, each having the same number of protons.
CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM	Chemical_Abstract_Service_Registry_Item_Number	A character string, assigned by the Chemical Abstract Service (CAS) to designate, at any given time, exactly one CHEMICAL. Over time, the same number has been re assigned. Therefore, over time, the same CAS Number can be used for more than one CHEMICAL, and the same substance can be identified by more than one CAS number. An examples is 58-08-2 for caffeine.
CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM-ASSIGNMENT	Chemical_Abstract_Service_Registry_Item_Number	A character string, assigned by the Chemical Abstract Service (CAS) to designate, at any given time, exactly one substance. Over time, the same number has been re assigned. Therefore, over time, the same CAS Number can be used for more than one substance, and the same substance can be identified by more than one CAS number. An examples is 58-08-2 for caffeine.
CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM-ASSIGNMENT	Chemical_Identifier	A designator of exactly one CHEMICAL.
CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM-ASSIGNMENT	Chemical_Abstract_Servce_Registry_Item_Assignment_Status_Code	A character string that stands for the current suitability for use of the CHEMICAL-ABSTRACT-SERVICE-REGISTRY-ITEM-ASSIGNMENT. Options are, DR, for Deleted Registry Number, AR, for Alternate Registry Number, and PR, for Preferred Registry Number.
CHEMICAL-COMPOUND	Chemical_Compound_Identifier	A designator of exactly one CHEMICAL-COMPOUND.
CHEMICAL-COMPOUND	Chemical_Compound_Molecular_Formula_Text	An abbreviated representation of the structural components of the CHEMICAL-COMPOUND where letters represent each bonded CHEMICAL-ELEMENT and numerals represents the count of the element in the structural component of the CHEMICAL-COMPOUND. Examples include H2O for water, C6H5CO2H for benzoic acid, and C4H11NO2 for diethanolamine.
CHEMICAL-COMPOUND	Chemical_Compound_Molecular_Weight	The sum of the atomic weights of all bonded elements included within the structure of the CHEMICAL-COMPOUND.
CHEMICAL-COMPOUND-ELEMENT	Chemical_Compound_Identifier	A designator of exactly one CHEMICAL-COMPOUND.
CHEMICAL-COMPOUND-ELEMENT	Chemical_Element_Identifier	A designator of exactly one CHEMICAL-ELEMENT.

Entity Name	Attribute Name	Attribute Description
CHEMICAL-ELEMENT	Chemical_Element_Atomic_Mass_Quantity	The average mass per atom of a chemical element compared to 1/12 of the mass of carbon-12 in its nuclear and electronic ground state. DDDS reference (51569) (A)
CHEMICAL-ELEMENT	Chemical_Element_Identifier	A designator of exactly one CHEMICAL-ELEMENT.
CHEMICAL-ELEMENT-OXIDATION-STATE	Chemical_Element_Oxidation_State_Identifier	A designator of exactly one CHEMICAL-ELEMENT-OXIDATION-STATE.
CHEMICAL-ELEMENT-OXIDATION-STATE	Chemical_Element_Identifier	A designator of exactly one CHEMICAL-ELEMENT.
CHEMICAL-ELEMENT-OXIDATION-STATE	Chemical_Element_Oxidation_State_Count_Quantity	The number of electrons exchanged (donated or accepted) by one atom of the relevant CHEMICAL-ELEMENT to achieve the CHEMICAL-ELEMENT-OXIDATION-STATE.
CHEMICAL-ELEMENT-OXIDATION-STATE	Chemical_Element_Oxidation_State_Plus_Minus_Indicator	A character string that identifies whether the CHEMICAL-ELMENT-OXIDATION-STATE resulted from a donation (+) or acceptance (-) of electrons.
COMBINATION-SUBSTANCE	Combination_Substance_Identifier	A designator of exactly one COMBINATION-SUBSTANCE.
COMBINATION-SUBSTANCE	Combination_Substance_Type_Name	A commonly understood term for the way that the ingredients in the COMBINATION-SUBSTANCE are merged. Options include Alloy, Colloid, Emulsion, Infusion, Isomer Combination, Mixture, Nanoparticle Matrix, Solution, Suspension, Tincture, and Other.
CONDITION-TO-AVOID	Condition_To_Avoid_Identifier	A designator of exactly one CONDITION-TO-AVOID.
CONDITION-TO-AVOID	Condition_To_Avoid_Details_Text	A thorough explanation of the CONDITION-TO-AVOID.
CONDITION-TO-AVOID	Condition_To_Avoid_Name	A commonly understood term for the CONDITION-TO-AVOID.
CONDITION-TO-AVOID	Condition_To_Avoid_Predefined_Indicator	A character string that identifies the CONDITION-TO-AVOID as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related SUBSTANCE).
CONDITION-TO-AVOID	Condition_To_Avoid_Summary_Text	A brief explanation of the CONDITION-TO-AVOID.
CONDITION-TO-AVOID-SUBSTANCE	Condition_To_Avoid_Identifier	A designator of exactly one CONDITION-TO-AVOID.
CONDITION-TO-AVOID-SUBSTANCE	Substance_Identifier	A designator of exactly one SUBSTANCE.
CONTAINING-COMPONENT	Object_Identifier	A designator of exactly one MATERIAL.
CONTAINING-	Containing_Component_Distinguishing_Identifier	A discriminator that designates one OBJECT-COMPONENT

Entity Name	Attribute Name	Attribute Description
COMPONENT		among all others for the same relevant containing OBJECT.
CONTAINING-COMPONENT	Containing_Component_Pressure_Quantity	The force per unit area exerted on CONTAINING-COMPONENT for which volume or weight measurements are specified when the specified force per unit area is not standard pressure. If the specified pressure is standard pressure (14.7 psi 760 mm Hg), the attribute will have a null value.
CONTAINING-COMPONENT	Containing_Component_Pressure_Unit_Of_Measure_Identifier	A designator of the magnitude of the force per unit area exerted on the CONTAINING-COMPONENT for which volume or weight measurements are specified when the specified force per unit area is not standard pressure.
DISPOSAL-CONSIDERATION	Disposal_Consideration_Identifier	The designator of exactly one DISPOSAL-CONSIDERATION.
DISPOSAL-CONSIDERATION	Disposal_Consideration_Category_Identifier	A designator of exactly one DISPOSAL-CONSIDERATION-CATEGORY.
DISPOSAL-CONSIDERATION	Disposal_Consideration_Details_Text	A thorough explanation of the DISPOSAL-CONSIDERATION.
DISPOSAL-CONSIDERATION	Disposal_Consideration_Name	A commonly understood term for a DISPOSAL-CONSIDERATION.
DISPOSAL-CONSIDERATION	Disposal_Consideration_Predefined_Indicator	A character string that identifies the DISPOSAL-CONSIDERATION as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related MATERIAL).
DISPOSAL-CONSIDERATION	Disposal_Consideration_Summary_Text	A brief explanation of the DISPOSAL-CONSIDERATION.
DISPOSAL-CONSIDERATION-CATEGORY	Disposal_Consideration_Category_Identifier	A designator of exactly one DISPOSAL-CONSIDERATION-CATEGORY.
DISPOSAL-CONSIDERATION-CATEGORY	Disposal_Consideration_Category_Details_Text	A thorough explanation of the DISPOSAL-CONSIDERATION-CATEGORY.
DISPOSAL-CONSIDERATION-CATEGORY	Disposal_Consideration_Category_Name	A commonly understood term for the DISPOSAL-CONSIDERATION-CATEGORY.
DISPOSAL-CONSIDERATION-CATEGORY	Disposal_Consideration_Category_Predefined_Indicator	A character string that identifies the DISPOSAL-CONSIDERATION-CATEGORY as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific indirectly related MATERIAL).
DISPOSAL-CONSIDERATION-CATEGORY	Disposal_Consideration_Category_Summary_Text	A brief explanation of the DISPOSAL-CONSIDERATION-CATEGORY.
DOCUMENT	Document_Identifier	The designator that distinguishes one DOCUMENT from another.

Entity Name	Attribute Name	Attribute Description
DOCUMENT	Document_Name	The name of a DOCUMENT.
DOCUMENT	Document_Routing_Code	The code that denotes the distribution category specified for a DOCUMENT.
DOCUMENT	Document_Type_Code	The symbol that stands for a type of DOCUMENT. Examples include: memorandum of understanding, design document, deed, contract, site investigation, remedial investigation/feasibility study, remedial design. Note: Documents are characterized using three attributes: Document_Type_Code (e.g., memo, deed, map) Document_Media_Type Code (e.g., Hardcopy, electronic) Document_Media_Format_Code (e.g., Paper, URL, Wave file, JPEG, xls).
DOCUMENT	Document_Calendar_Date	The calendar date stated on a DOCUMENT.
DOCUMENT	Document_Description_Text	The text that describes a DOCUMENT.
DOCUMENT	Document_Number	The numeric characters assigned to a DOCUMENT.
DOCUMENT	Document_Version_Number	The sequential number that tracks the history of each version of the DOCUMENT through the life of the DOCUMENT.
DOCUMENT	Document_Publication_Date	The calendar day for the publication of the DOCUMENT.
DOCUMENT	Document_Effective_Date	The earliest date that the DOCUMENT is to be put into use.
DOCUMENT	Document_Image	An electronic representation of the entire DOCUMENT when viewed as a picture.
ENGINEERING-CONTROL	Engineering_Control_Identifier	A designator of exactly one ENGINEERING-CONTROL.
ENGINEERING-CONTROL	Engineering_Control_Details_Text	A thorough description of the ENGINEERING-CONTROL. For example, Facilities storing or utilizing this preparation should be equipped with an eyewash fountain and a safety shower.
ENGINEERING-CONTROL	Engineering_Control_Name	A commonly understood term for the ENGINEERING-CONTROL. For example, Rinsing Equipment.
ENGINEERING-CONTROL	Engineering_Control_Predefined_Indicator	A character string that identifies the ENGINEERING-CONTROL as a either Standardized (coming from an established, predefined list) or Individualized (unique to a specific MATERIAL).
ENGINEERING-CONTROL	Engineering_Control_Summary_Text	A brief description of the ENGINEERING-CONTROL. For example, Equipped with eyewash fountain and shower.
ENGINEERING-CONTROL	Engineering_Control_Type_Name	A commonly used term for the ENGINEERING-CONTROL-TYPE. Examples include: Ventilation, Barriers, and Laboratory Hood.
ENGINEERING-CONTROL-TYPE	Engineering_Control_Type_Name	A commonly used term for the ENGINEERING-CONTROL-TYPE. Examples include: Ventilation, Barriers, and Laboratory Hood.
ENGINEERING-CONTROL-TYPE	Engineering_Control_Type_Description_Text	An explanation of the ENGINEERING-CONTROL-TYPE.
EXPOSURE-STUDY	Exposure_Study_Identifier	A designator of exactly one EXPOSURE-STUDY.
EXPOSURE-STUDY	Exposure_Study_Name	The title of the EXPOSURE-STUDY.
EXPOSURE-STUDY	Exposure_Study_Details_Text	A thorough description of the EXPOSURE-STUDY.

Entity Name	Attribute Name	Attribute Description
EXPOSURE-STUDY	Exposure_Study_Summary_Text	A brief description of the EXPOSURE-STUDY.
EXPOSURE-STUDY	Exposure_Study_Conducting_Organization_Identifier	A designator of the ORGANIZATION that sanctioned the study.
EXPOSURE-STUDY-SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT	Exposure_Study_Substance_Adverse_Environmental_Effect_Description_Text	An explanation of the relevance of the EXPOSURE-STUDY to the determination of the SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT.
EXPOSURE-STUDY-SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT	Exposure_Study_Identifier	A designator of exactly one EXPOSURE-STUDY.
EXPOSURE-STUDY-SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT	Substance_Identifier	A designator of exactly one SUBSTANCE.
EXPOSURE-STUDY-SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT	Adverse_Environmental_Effect_Identifier	A designator of exactly one ADVERSE-ENVIRONMENTAL-EFFECT.
EXPOSURE-STUDY-SUBSTANCE-ADVERSE-HEALTH-EFFECT	Exposure_Study_Substance_Adverse_Health_Effect_Description_Text	An explanation of the relevance of the EXPOSURE-STUDY to the determination of the SUBSTANCE-ADVERSE-HEALTH-EFFECT.
EXPOSURE-STUDY-SUBSTANCE-ADVERSE-HEALTH-EFFECT	Exposure_Study_Identifier	A designator of exactly one EXPOSURE-STUDY.
EXPOSURE-STUDY-SUBSTANCE-ADVERSE-HEALTH-EFFECT	Substance_Identifier	A designator of exactly one SUBSTANCE.
EXPOSURE-STUDY-SUBSTANCE-ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT.
FIRST-AID-MEASURE	First_Aid_Measure_Identifier	A designator of exactly one FIRST-AID-MEASURE.
FIRST-AID-MEASURE	First_Aid_Measure_Details_Text	A thorough explanation of the FIRST-AID-MEASURE. For example, Immediately flush eyes with water; remove contact lenses.

Entity Name	Attribute Name	Attribute Description
		if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.
FIRST-AID-MEASURE	First_Aid_Measure_Name	A commonly understood term for the FIRST-AID-MEASURE. For example, Flush Eyes With Water .
FIRST-AID-MEASURE	First_Aid_Measure_Predefined_Indicator	A character string that identifies the FIRST-AID-MEASURE as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related FIRST-AID-MEASURE).
FIRST-AID-MEASURE	First_Aid_Measure_Summary_Text	A brief description of the FIRST-AID-MEASURE. For example, Immediately flush eyes with water.
FIRST-AID-MEASURE	Route_Of_Exposure_Name	A commonly used term for the ROUTE-OF-EXPOSURE. Known values are Eye Contact, Skin Contact, Inhalation, and Ingestion.
FIRST-AID-MEASURE	First_Aid_Measure_Pictogram_Reference_Text	A description of the relevant icon that represents a valid combination of low level categories for the FIRST-AID-MEASURE.
FLASH-POINT-EVALUATION-METHOD	Flash_Point_Evaluation_Method_Name	A commonly understood term for the FLASH-POINT-EVALUATION-METHOD. Examples include: Cleveland Open Cup, Tagliabue Closed Cup, Pensky-Martens Closed Cup, and Setaflash Closed Cup.
FLASH-POINT-EVALUATION-METHOD	Flash_Point_Evaluation_Method_Description_Text	An explanation of the FLASH-POINT-EVALUATION-METHOD.
GAS	Gas_Identifier	A designator of exactly one GAS.
GAS	Gas_Lower_Concentration_Explosive_Limit_Percent_Quantity	The lowest relative amount of the GAS in air, expressed in one hundredths, at which the combination will produce a flash of fire when an ignition source is present. At concentrations lower, the mixture is too lean to burn.
GAS	Gas_Upper_Concentration_Explosive_Limit_Percent_Quantity	The highest relative amount of the GAS in air, expressed in one hundredths, at which the combination will produce a flash of fire when an ignition source is present. At higher concentrations, the mixture is too rich to burn.
GENERAL-HYGIENE-CONSIDERATION	General_Hygiene_Consideration_Identifier	A designator of exactly one GENERAL-HYGIENE-CONSIDERATION.
GENERAL-HYGIENE-CONSIDERATION	General_Hygiene_Consideration_Details_Text	A commonly understood term for the GENERAL-HYGIENE-CONSIDERATION.
GENERAL-HYGIENE-CONSIDERATION	General_Hygiene_Consideration_Name	A commonly understood term for the GENERAL-HYGIENE-CONSIDERATION.
GENERAL-HYGIENE-CONSIDERATION	General_Hygiene_Consideration_Predefined_Indicator	A character string that identifies the GENERAL-HYGIENE-CONSIDERATION as a either Standardized (coming from an established, predefined list) or Individualized (unique to a specific

Entity Name	Attribute Name	Attribute Description
		MATERIAL).
GENERAL-HYGIENE-CONSIDERATION	General_Hygiene_Consideration_Summary_Text	A brief description of the GENERAL-HYGIENE-CONSIDERATION.
GRANULATED-SOLID	Granulated_Solid_Apparent_Density_Unit_Of_Measure_Identifier	A designator of the scale of the magnitude of the mass per unit volume as quantified by the Granulated_Solid_Apparent_Density_Quantity. An example of a relevant unit is grams per cubic centimeter.
GRANULATED-SOLID	Granulated_Solid_Apparent_Specific_Surface_Area_Unit_Of_Measure_Identifier	A designator of the scale of the magnitude of the area per unit of mass as quantified by the Granulated_Solid_Apparent_Specific_Surface_Area. An example of a relevant unit is square centimeters per gram
GRANULATED-SOLID	Granulated_Solid_Amorphous_Indicator	A discriminator that identifies the GRANULATED-SOLID as being either Amorphous (having a random, unordered, uniform molecular structure) or Crystalline (having a molecular structure that is highly ordered into fixed geometric patterns).
GRANULATED-SOLID	Granulated_Solid_Apparent_Density_Quantity	The mass per unit volume of the GRANULATED-SOLID at standard temperature, pressure, and gravity after it has been poured and without being subjected to external forces (such as shaking) that might change how the particles are packed together.
GRANULATED-SOLID	Granulated_Solid_Apparent_Specific_Surface_Area	The sum of the surface areas of all the granular surfaces contained in a unit mass of the GRANULATED-SOLID.
GRANULATED-SOLID	Granulated_Solid_Powder_Indicator	A discriminator that identifies the GRANULATED-SOLID of being a Powder (consisting of finely dispersed solid particles) or Not Powder.
GRANULATED-SOLID	Solid_Identifier	A designator of exactly one SOLID.
HAZARD	Hazard_Identifier	The designator of exactly one Hazard.
HAZARD	Hazard_Details_Text	A thorough description of the HAZARD.
HAZARD	Hazard_Summary_Text	A brief description of the HAZARD.
HAZARD	Hazard_Name	A commonly-understood term for the HAZARD.
HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT	Adverse_Environmental_Effect_Identifier	A designator of exactly one ADVERSE-ENVIRONMENTAL-EFFECT.
HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT	Hazard_Identifier	The designator of exactly one Hazard.
HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION	Adverse_Environmental_Effect_Identifier	A designator of exactly one ADVERSE-ENVIRONMENTAL-EFFECT.
HAZARD-ADVERSE-	Hazard_Adverse_Environmental_Effect_Determination_Distinguishing_Ide	A discriminator that designates one exact HAZARD-ADVERSE-

Entity Name	Attribute Name	Attribute Description
ENVIRONMENTAL-EFFECT-DETERMINATION	ntifier	ENVIRONMENTAL-EFFECT-DETERMINATION among all others for the same HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT.
HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION	Hazard_Identifier	The designator of exactly one Hazard.
HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION	Hazard_Adverse_Environmental_Effect_Determination_Start_Date	The first effective calendar day of the HAZARD-ADVERSE-ENVIRONMENT-EFFECT-DETERMINATION.
HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION	Hazard_Adverse_Environmental_Effect_Determination_Stop_Date	The last effective calendar day of the HAZARD-ADVERSE-ENVIRONMENT-EFFECT-DETERMINATION.
HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION	Hazard_Adverse_Environmental_Effect_Determination_Organization_Identifier	A designator of the ORGANIZATION that drew the relevant conclusion(s) involved in the HAZARD-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION.
HAZARD-ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT.
HAZARD-ADVERSE-HEALTH-EFFECT	Hazard_Identifier	The designator of exactly one Hazard.
HAZARD-ADVERSE-HEALTH-EFFECT-DETERMINATION	Adverse_Health_Effect_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT.
HAZARD-ADVERSE-HEALTH-EFFECT-DETERMINATION	Hazard_Adverse_Healtlh_Effect_Determination_Distinguishing_Identifier	A designator of one exact HAZARD-ADVERSE-HEALTH-EFFECT-DETERMINATION among all other for the same HAZARD-ADVERSE-HEALTH-EFFECT.
HAZARD-ADVERSE-HEALTH-EFFECT-DETERMINATION	Hazard_Identifier	The designator of exactly one Hazard.
HAZARD-ADVERSE-HEALTH-EFFECT-DETERMINATION	Hazard_Adverse_Healtlh_Effect_Determination_Start_Date	The first effective calendar day of the HAZARD-ADVERSE-HEALTH-EFFECT-DETERMINATION.
HAZARD-ADVERSE-HEALTH-EFFECT-DETERMINATION	Hazard_Adverse_Healtlh_Effect_Determination_Stop_Date	The last effective calendar day of the HAZARD-ADVERSE-HEALTH-EFFECT-DETERMINATION.
HAZARD-ADVERSE-HEALTH-EFFECT-DETERMINATION	Hazard_Adverse_Health_Effect_Determination_Organization_Identifier	A designator of the ORGANIZATION that drew the conclusion(s) involved in the HAZARD-ADVERSE-HEALTH-EFFECT-DETERMINATION.

Entity Name	Attribute Name	Attribute Description
HAZARD-CATEGORY	Hazard_Category_Identifier	A designator of exactly one HAZARD-CATEGORY.
HAZARD-CATEGORY	Hazard_Category_Short_Name	An abbreviation, acronym, or other shortened commonly-understood term for the HAZARD-CATEGORY.
HAZARD-CATEGORY	Hazardous_Material_Category_Description_Text	An explanation of the nature of the HAZARDOUS-MATERIAL-CATEGORY and the implications regarding any MATERIALs to which it is assigned.
HAZARD-CATEGORY	Hazard_Category_Start_Date	The first effective calendar day of the HAZARD-CATEGORY.
HAZARD-CATEGORY	Hazard_Category_Long_Name	A commonly understood, full length term for the HAZARD-CATEGORY.
HAZARD-CATEGORY	Hazard_Category_Stop_Date	The last effective calendar day of the HAZARD-CATEGORY.
HAZARD-CATEGORY	Hazard_Category_Code	A character string that stands for the HAZARD-CATEGORY.
HAZARD-CATEGORY	Hazard_Category_Promulgation_Type_Name	A character string that identifies the functional and organizational nature of the immediate source that established the HAZARD-CATEGORY. Known options include Organization, if the source is an ORGANIZATION, and Regulation, if the source is a REGULATION.
HAZARD-CATEGORY	Hazard_Category_Classification_Identifier	A designator of the immediately higher HAZARD-CATEGORY that contains the current HAZARD-CATEGORY within it.
HAZARD-CATEGORY-HAZARD-ASSIGNMENT	Hazard_Category_Hazard_Assignment_Start_Date	The first effective calendar day of the HAZARD-CATEGORY-HAZARD-ASSIGNMENT.
HAZARD-CATEGORY-HAZARD-ASSIGNMENT	Hazard_Category_Hazard_Assignment_Stop_Date	The last effective calendar day of the HAZARD-CATEGORY-HAZARD-ASSIGNMENT.
HAZARD-CATEGORY-HAZARD-ASSIGNMENT	Hazard_Identifier	The designator of exactly one Hazard.
HAZARD-CATEGORY-HAZARD-ASSIGNMENT	Hazard_Category_Identifier	A designator of exactly one HAZARD-CATEGORY.
HAZARD-PERSONAL-PROTECTIVE-EQUIPMENT-SUITABILITY	Hazard_Identifier	The designator of exactly one Hazard.
HAZARD-PERSONAL-PROTECTIVE-EQUIPMENT-	Personal_Protective_Equipment_Identifier	A designator of exactly one piece of PERSONAL-PROTECTIVE-EQUIPMENT.

Entity Name	Attribute Name	Attribute Description
SUITABILITY		
HAZARD-PERSONAL-PROTECTIVE-EQUIPMENT-SUITABILITY	Hazard_Personal_Protective_Equipment_Suitability_Details_Text	A through explanation of the HAZARD-PERSONAL-PROTECTIVE-EQUIPMENT-SUITABILITY.
HAZARD-PERSONAL-PROTECTIVE-EQUIPMENT-SUITABILITY	Hazard_Personal_Protective_Equipment_Suitability_Summary_Text	A brief explanation of the HAZARD-PERSONAL-PROTECTIVE-EQUIPMENT-SUITABILITY.
HAZARDOUS-MATERIAL-CATEGORY	Hazardous_Material_Category_Background_Color_Name	A commonly understood term use for the hue, if any, assigned as the fill color of the HAZARDOUS-MATERIAL-CATEGORY, and all its lower level categories, but not any of its higher level categories, when it is depicted graphically.
HAZARDOUS-MATERIAL-CATEGORY	Hazardous_Material_Category_Description_Text	An explanation of the nature of the HAZARDOUS-MATERIAL-CATEGORY and the implications regarding any MATERIALs to which it is assigned.
HAZARDOUS-MATERIAL-CATEGORY	Hazardous_Material_Category_Name	A commonly-understood term for the HAZARDOUS-MATERIAL-CATEGORY.
HAZARDOUS-MATERIAL-CATEGORY	Hazardous_Material_Category_Pictogram_Based_Indicator	A character string that identifies whether the HAZARDOUS-MATERIAL-CATEGORY is based on the use of a graphical means to depict the natures of the hazards of the relevant MATERIALs.
HAZARDOUS-MATERIAL-CATEGORY	Hazardous_Material_Classification_System_Name	A commonly understood term for the Name of the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM. Examples are: - NFPA Section 704 Hazard Identification System, - HMIG System, and the - HMIS System.
HAZARDOUS-MATERIAL-CATEGORY	Hazardous_Material_Classification_System_Version_Start_Date	The first calendar day of effectiveness for the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM.
HAZARDOUS-MATERIAL-CATEGORY	Hazardous_Material_Category_Identifier	A designator of exactly one HAZARDOUS-MATERIAL-CATEGORY.
HAZARDOUS-MATERIAL-CATEGORY	Containing_Hazardous_Material_Category_Identifier	A designator of the HAZARDOUS-MATERIAL-CATEGORY that includes the current HAZARDOUS-MATERIAL-CATEGORY within it.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM	Hazardous_Material_Classification_System_Name	A commonly understood term for the Name of the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM. Examples are: - NFPA Section 704 Hazard Identification System, - HMIG System, and the - HMIS System.
HAZARDOUS-MATERIAL-	Hazardous_Material_Classification_System_Version_Start_Date	The first calendar day of effectiveness for the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM.

Entity Name	Attribute Name	Attribute Description
CLASSIFICATION-SYSTEM		
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM	Hazardous_Material_Classification_System_Description_Text	An explanation of the nature of the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM and its use.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM	Hazardous_Material_Classification_System_Version_Stop_Date	The last calendar day that the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM was effective.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM	Hazardous_Material_Classification_System_Promulgating_Organization_Identifier	A designator of the ORGANIZATION that established the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Hazardous_Material_Classification_System_Name	A commonly understood term for the Name of the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM. Examples are: - NFPA Section 704 Hazard Identification System, - HMIG System, and the - HMIS System.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Hazardous_Material_Classification_System_Pictogram_Distinguishing_Identifier	A designator that distinguishes one HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM from all others for the same HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Hazardous_Material_Classification_System_Version_Start_Date	The first calendar day of effectiveness for the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Hazardous_Material_Classification_System_Pictogram_Image	An electronic depiction of the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Hazardous_Material_Classification_System_Pictogram_Name	A commonly-understood term for the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM.
HAZARDOUS-MATERIAL-	Hazardous_Material_Classification_System_Name	A commonly understood term for the Name of the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM. Examples are: -

Entity Name	Attribute Name	Attribute Description
CLASSIFICATION-SYSTEM-PICTOGRAM-CATEGORY		NFPA Section 704 Hazard Identification System, - HMIG System, and the - HMIS System.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM-CATEGORY	Hazardous_Material_Classification_System_Pictogram_Distinguishing_Identifier	A designator that distinguishes one HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM from all others for the same HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM-CATEGORY	Hazardous_Material_Classification_System_Version_Start_Date	The first calendar day of effectiveness for the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM.
HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM-CATEGORY	Hazardous_Material_Category_Identifier	A designator of exactly one HAZARDOUS-MATERIAL-CATEGORY.
INGREDIENT	Ingredient_Considered_De_Minimus_Indicator	A character string that identifies the contained SUBSTANCE of the INGREDIENT as an inconsequential constituent of the containing SUBSTANCE.
INGREDIENT	Ingredient_Considered_EPCRA_Hazardous_Indicator	A character string that identifies whether the contained SUBSTANCE of the INGREDIENT is asserted by its manufacturer(s) to be included as hazardous under EPCRA because it has a potentially negative effect resulting from exposure of persons, animals, plants, structures, property, equipment, or the environment to it. Options are Hazardous and Not Hazardous.
INGREDIENT	Ingredient_Considered_Impurity_Indicator	A character string that identifies whether the contained SUBSTANCE of the INGREDIENT is asserted by its manufacturer(s) to be a contaminant of the containing SUBSTANCE. Options are Impurity and Not Impurity.
INGREDIENT	Ingredient_Is_Stabilizer_Indicator	A character string that identifies the constituent SUBSTANCE as inhibiting one or more hazardous reactions of the containing SUBSTANCE.
INGREDIENT	Ingredient_Contained_Substance_Identifier	A designator of the SUBSTANCE that is the direct constituent within the encompassing SUBSTANCE.
INGREDIENT	Ingredient_Greater_Substance_Identifier	A designator of the SUBSTANCE that contains the second

Entity Name	Attribute Name	Attribute Description
		SUBSTANCE as a direct constituent.
INGREDIENT	Ingredient_Non_Numerical_Percent_Text	A description of the relative contribution of the ingredient to the overall quantity of the relevant SUBSTANCE when a numerical percentage is not provided. For example, Trace, or To Balance.
INGREDIENT	Ingredient_Non_Numerical_Percent_Calculation_Text	A description of value to be use for the relative contribution of the ingredient to the overall quantity of the relevant SUBSTANCE when a numerical percentage is not provided. For example, Less than 1% by weight, 3% by volume, or 0%.
INGREDIENT-PERCENTAGE	Ingredient_Percentage_Measurement_Type_Name	A commonly used term for the kind of percentage that is recorded for example, for percent by volume or for percent by weight.
INGREDIENT-PERCENTAGE	Ingredient_Percentage_Type_Name	A commonly used term for the relative magnitude that the contained SUBSTANCE of the INGREDIENT is specified to be in the greater SUBSTANCE when compared to the percentage recorded. Options are Equal To, Less Than, Greater Than, No Less Than, and No More Than.
INGREDIENT-PERCENTAGE	Ingredient_Percentage_Quantity	The INGREDIENT-PERCENTAGE expressed in one hundredths of the total of all constituents in the encompassing SUBSTANCE. For example, 25.5 would indicate that 25.5% of the overall SUBSTANCE was made up of the relevant constituent INGREDIENT.
INGREDIENT-PERCENTAGE	Ingredient_Contained_Substance_Identifier	A designator of the SUBSTANCE that is the direct constituent within the encompassing SUBSTANCE.
INGREDIENT-PERCENTAGE	Ingredient_Greater_Substance_Identifier	A designator of the SUBSTANCE that contains the second SUBSTANCE as a direct constituent.
INGREDIENT-PERCENTAGE-TRADE-SECRET	Trade_Secret_Administration_Organization_Identifier	The designator of the exact organization that dispenses the TRADE-SECRET.
INGREDIENT-PERCENTAGE-TRADE-SECRET	Trade_Secret_Number	A character string that designates exactly one TRADE-SECRET among all others that are recorded with the ORGANIZATION that administers the TRADE-SECRET.
INGREDIENT-PERCENTAGE-TRADE-SECRET	Ingredient_Greater_Substance_Identifier	A designator of the SUBSTANCE that contains the second SUBSTANCE as a direct constituent.
INGREDIENT-PERCENTAGE-TRADE-SECRET	Ingredient_Contained_Substance_Identifier	A designator of the SUBSTANCE that is the direct constituent within the encompassing SUBSTANCE.
INGREDIENT-TRADE-SECRET	Ingredient_Trade_Secret_Confidential_Ingredient_Inventory_Number	A character string that designates the exact relevant proprietary INGREDIENT as provided by the ORGANIZATION registering the relevant TRADE-SECRET.
INGREDIENT-TRADE-SECRET	Ingredient_Contained_Substance_Identifier	A designator of the SUBSTANCE that is a direct constituent of the encompassing SUBSTANCE

Entity Name	Attribute Name	Attribute Description
INGREDIENT-TRADE-SECRET	Ingredient_Greater_Substance_Identifier	A designator of the SUBSTANCE that encompasses the direct constituent SUBSTANCE.
INGREDIENT-TRADE-SECRET	Trade_Secret_Administration_Organization_Identifier	The designator of the organization that dispenses the TRADE-SECRET.
INGREDIENT-TRADE-SECRET	Trade_Secret_Number	A character string that designates exactly one TRADE-SECRET among all others that are recorded with the ORGANIZATION that administers the TRADE-SECRET.
INGREDIENT-TRADE-SECRET-SUBSTANCE-NAME	Ingredient_Contained_Substance_Identifier	A designator of the SUBSTANCE that is the direct constituent within the encompassing SUBSTANCE.
INGREDIENT-TRADE-SECRET-SUBSTANCE-NAME	Ingredient_Greater_Substance_Identifier	A designator of the SUBSTANCE that contains the second SUBSTANCE as a direct constituent.
INGREDIENT-TRADE-SECRET-SUBSTANCE-NAME	Trade_Secret_Administration_Organization_Identifier	A character string that identifies a public or private organizational entity that supports a given mission, function, business objective or other criteria. The creation of an Organization Unique Identifier (OUID), a unique, simple and nonintelligent (containing no embedded information or smart codes) identifier will support standardized unique identification of organizations as required by the DoD. This identifier will be used to identify all organizations within the DOD and non-DOD organizations to include, but not limited to, U.S. and foreign federal, civil and commercial entities.
INGREDIENT-TRADE-SECRET-SUBSTANCE-NAME	Trade_Secret_Number	A character string that designates exactly one TRADE-SECRET among all others that are recorded with the ORGANIZATION that administers the TRADE-SECRET.
INGREDIENT-TRADE-SECRET-SUBSTANCE-NAME	Substance_Synonym_Identifier	A designator of exactly one SUBSTANCE-SYNONYM.
INSEPARABLE-OBJECT	Object_Identifier	A designator of exactly one OBJECT.
INSEPARABLE-OBJECT	Inseparable_Object_Tare_Weight_Quantity	The mass of the INSEPARABLE-OBJECT when it is empty.
INSEPARABLE-OBJECT	Inseparable_Object_Maximum_Weight_Capacity_Quantity	The greatest mass that the INSEPARABLE-OBJECT can safely contain within it.
INSEPARABLE-OBJECT	Inseparable_Object_Maximum_Volume_Capacity_Quantity	The greatest volume that can be contained safely within the INSEPARABLE-OBJECT.
INSEPARABLE-OBJECT	Inseparable_Object_Tare_Weight_Unit_Of_Measure_Identifier	A designator of the UNIT-OF-MEASURE for the mass of the INSEPARABLE-OBJECT when it is empty.
INSEPARABLE-OBJECT	Inseparable_Object_Maximum_Weight_Capacity_Unit_Of_Measure_Identifier	A designator of the UNIT-OF-MEASURE for the highest mass that is safely contained in the INSEPARABLE-OBJECT.
INSEPARABLE-	Inseparable_Object_Maximum_Volume_Capacity_Unit_Of_Measure_Identi	A designator of the UNIT-OF-MEASURE for the highest space that

Entity Name	Attribute Name	Attribute Description
OBJECT	fier	can be safely contained in the INSEPARABLE-OBJECT.
INSEPARABLE-OBJECT	Packaging_Type_Identifier	A designator of exactly one PACKAGING-TYPE.
ISOTOPE	Isotope_Identifier	A designator of exactly one ISOTOPE.
ISOTOPE	Chemical_Element_Identifier	A designator of exactly one CHEMICAL-ELEMENT.
ISOTOPE	Isotope_Atomic_Mass_Quantity	The average mass of one atom of the ISOTOPE compared to 1/12 of the mass of carbon-12 in its nuclear and electronic ground state.
ISOTOPE	Isotope_Neutron_Quantity	A count of the electrically neutral baryons within the nucleus of one atom of the ISOTOPE.
ISOTOPE	Isotope_Radioactive_Indicator	A character string that identifies whether the ISOTOPE undergoes spontaneous nuclear disintegration.
LIQUID	Liquid_Identifier	A designator of exactly one LIQUID.
LIQUID	Liquid_Viscosity_Unit_Of_Measure_Identifier	A designator of the scale used for the magnitude of the Liquid_Viscosity_Quantity. Examples of units of measure are: – poise, which is 1 dyne per second per square centimeter; – centipoise (100 centipoise = 1 poise); and – Newton second per square meter.
LIQUID	Liquid_Apparent_Fluidity_Indicator	A designator that identifies the LIQUID as qualitatively perceivable as being either Viscous (relatively resistant to changing shape) or Thin (mobile, relatively unresistant to changing shape).
LIQUID	Liquid_Relative_Evaporation_Rate	The ratio of the speed at which the LIQUID changes to a vapor in comparison to that of butyl acetate at standard temperature and pressure. Note that by definition, butyl acetate has a Liquid_Relative_Evaporation_Rate of 1.
LIQUID	Liquid_Viscosity_Quantity	The measure of the LIQUID's tendency to resist internal flow without regard to its density.
LIQUID	Liquid_pH_Quantity	A measure of the acidity or alkalinity of a LIQUID (i.e., the activity of its hydrogen ions) that is a solution. The value is a numerical value ranging from 0 to 14 on a logarithmic scale, 7 being the value for a neutral (neither acidic or alkaline) solution, increasing with increased alkalinity and decreasing with increased acidity. Note: pH stands for p(OTENTIAL OF) H(YDROGEN).
LIQUID	Liquid_pH_Description_Text	A description of the conditions and circumstances under which the Liquid_pH_Quantity was measured.
MATERIAL	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL	Material_Appearance_Details_Text	A thorough description of the way the MATERIAL looks to the naked eye. For example: A thick, light pink liquid containing minute specks of purple sediment distributed throughout .
MATERIAL	Material_Appearance_Summary_Text	A brief description of the way the MATERIAL looks to the naked eye. For example: Cloudy and pink .
MATERIAL	Material_Comments_Text	Explanatory information about the MATERIAL. For example: 'This

Entity Name	Attribute Name	Attribute Description
		substance is a mixture of isomers where the ratio is unknown.'
MATERIAL	Material_Hazards_Emergency_Overview_Text	A free-form summary explanation of the health, physical, and environmental hazards that require immediate attention in emergency situations involving the use of or exposure to the MATERIAL.
MATERIAL	Material_Lot_Batch_Indicator	A character string that identifies all instances of the MATERIAL as having been created at the same time in the same way with the same component materials, therefore, having potentially identical characteristics that might vary from those of another such group.
MATERIAL	Material_Producer_Supplied_Name	A commonly understood term for the MATERIAL, the term being provided by the creator of the MATERIAL.
MATERIAL	Material_Type_Name	A commonly understood term for a gross characterization of the MATERIAL. Known options are Object for a MATERIAL that is inherently limited in extent, essentially a kind of discrete item, and Substance for a MATERIAL that is not limited.
MATERIAL	Material_Odor_Name	A commonly used term for the ODOR of the MATERIAL. Examples include fresh, pungent, acrid, fragrant, lemony, and like rotten eggs.
MATERIAL-DISPOSAL-CONSIDERATION	Disposal_Consideration_Identifier	The designator of exactly one DISPOSAL-CONSIDERATION.
MATERIAL-DISPOSAL-CONSIDERATION	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-DISPOSAL-CONSIDERATION	Material_Disposal_Consideration_Details_Text	A through explanation of how the relevant DISPOSAL-CONSIDERATION applies to the relevant MATERIAL. For example, it might establish the disposal method included as the DISPOSAL-CONSIDERATION as the preferred one to use among many for the MATERIAL.
MATERIAL-DISPOSAL-CONSIDERATION	Material_Disposal_Consideration_Summary_Text	A brief explanation of how the relevant DISPOSAL-CONSIDERATION applies to the relevant MATERIAL.
MATERIAL-DOCUMENT	Document_Identifier	The designator that distinguishes one DOCUMENT from another.
MATERIAL-DOCUMENT	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-DOCUMENT	Material_Document_Stop_Date	The last calendar day that the relevant DOCUMENT applies to the relevant MATERIAL.
MATERIAL-DOCUMENT	Material_Document_Start_Date	The first calendar day that the relevant DOCUMENT applies to the relevant MATERIAL.
MATERIAL-	Engineering_Control_Identifier	A designator of exactly one ENGINEERING-CONTROL.

Entity Name	Attribute Name	Attribute Description
ENGINEERING-CONTROL		
MATERIAL-ENGINEERING-CONTROL	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-ENGINEERING-CONTROL	Material_Engineering_Control_Details_Text	A through explanation of the MATERIAL-ENGINEERING-CONTROL.
MATERIAL-ENGINEERING-CONTROL	Material_Engineering_Control_Summary_Text	A brief explanation of the MATERIAL-ENGINEERING-CONTROL.
MATERIAL-FLASH-POINT-EVALUATION	Material_Flash_Point_Evaluation_Distinguishing_Identifier	A discriminator that designates exactly one FLASH-POINT-EVALUATION among all others for the same MATERIAL.
MATERIAL-FLASH-POINT-EVALUATION	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-FLASH-POINT-EVALUATION	Material_Flash_Point_Evaluation_Date	The calendar day that the MATERIAL-FLASH-POINT-EVALUATION was determined via the related FLASH-POINT-TEMPERATURE-METHOD for the relevant MATERIAL.
MATERIAL-FLASH-POINT-EVALUATION	Material_Flash_Point_Evaluation_Temperature	As determined via the relevant FLASH-POINT-TEMPERATURE_METHOD, the heat of the relevant MATERIAL when it gives off a vapor in sufficient concentration to ignite.
MATERIAL-FLASH-POINT-EVALUATION	Material_Flash_Point_Evaluation_Temperature_Unit_Of_Measure_Identifier	A designator of the scale used by the MATERIAL-FLASH-POINT-EVALUATION for the magnitude of the heat of the relevant MATERIAL when it vaporizes in sufficient concentration to ignite for example, the unit might be Degrees Centigrade, Degrees Fahrenheit, Degrees Kelvin, or Degrees Celsius.
MATERIAL-FLASH-POINT-EVALUATION	Material_Flash_Point_Evaluation_Method_Name	A commonly used term for the FLASH-POINT-EVALUATION-METHOD used to make the MATERIAL-FLASH-POINT-EVALUATION.
MATERIAL-GENERAL-HYGIENE-CONSIDERATION	General_Hygiene_Consideration_Identifier	A designator of exactly one GENERAL-HYGIENE-CONSIDERATION.
MATERIAL-GENERAL-HYGIENE-CONSIDERATION	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-HAZARDOUS-MATERIAL-CATEGORY	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-HAZARDOUS-	Hazardous_Material_Category_Identifier	A designator of exactly one HAZARDOUS-MATERIAL-CATEGORY.

Entity Name	Attribute Name	Attribute Description
MATERIAL-CATEGORY		
MATERIAL-HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Hazardous_Material_Classification_System_Name	A commonly understood term for the Name of the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM. Examples are: - NFPA Section 704 Hazard Identification System, - HMIG System, and the - HMIS System.
MATERIAL-HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Hazardous_Material_Classification_System_Pictogram_Distinguishing_Identifier	A designator that distinguishes one HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM from all others for the same HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM.
MATERIAL-HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Hazardous_Material_Classification_System_Version_Start_Date	The first calendar day of effectiveness for the HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM.
MATERIAL-HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Material_Hazardous_Material_Classification_System_Pictogram_Start_Date	The first calendar day of recognition that each PICTOGRAM-BASED-HAZARDOUS-MATERIAL-CATEGORY depicted in the relevant HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM is or will be appropriate for the relevant MATERIAL.
MATERIAL-HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM	Material_Hazardous_Material_Classification_System_Pictogram_Stop_Date	The last calendar day of recognition that each PICTOGRAM-BASED-HAZARDOUS-MATERIAL-CATEGORY depicted in the relevant HAZARDOUS-MATERIAL-CLASSIFICATION-SYSTEM-PICTOGRAM is or was appropriate for the relevant MATERIAL.
MATERIAL-LOT	Material_Lot_Batch_Number	A discriminator established by the ORGANIZATION that created the relevant MATERIAL-LOT to distinguish one MATERIAL-LOT among all others for the same MATERIAL created by the ORGANIZATION.

Entity Name	Attribute Name	Attribute Description
MATERIAL-LOT	Material_Lot_Creation_Date	The calendar day that the MATERIAL-LOT was produced.
MATERIAL-LOT	Material_Lot_Original_Material_Identifier	A designator of the MATERIAL that was manufactured as the MATERIAL-LOT.
MATERIAL-LOT	Material_Lot_Identifier	A designator of exactly one MATERIAL-LOT.
MATERIAL-MANUFACTURE-PERIOD	Material_Manufacture_Period_Start_Date	The first calendar day of the MATERIAL-MANUFACTURE-PERIOD.
MATERIAL-MANUFACTURE-PERIOD	Material_Manufacture_Period_Stop_Date	The last calendar day of the MATERIAL-MANUFACTURE-PERIOD.
MATERIAL-MANUFACTURE-PERIOD	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-MANUFACTURE-PERIOD	Organization_Unique_Identifier	A character string that identifies a public or private organizational entity that supports a given mission, function, business objective or other criteria. The creation of an Organization Unique Identifier (OUID), a unique, simple and nonintelligent (containing no embedded information or smart codes) identifier will support standardized unique identification of organizations as required by the DoD. This identifier will be used to identify all organizations within the DOD and non-DOD organizations to include, but not limited to, U.S. and foreign federal, civil and commercial entities.
MATERIAL-MANUFACTURER	Material_Manufacture_Part_Number	A character string provided by the creator of the MATERIAL to identify it.
MATERIAL-MANUFACTURER	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-MANUFACTURER	Organization_Unique_Identifier	A character string that identifies a public or private organizational entity that supports a given mission, function, business objective or other criteria. The creation of an Organization Unique Identifier (OUID), a unique, simple and nonintelligent (containing no embedded information or smart codes) identifier will support standardized unique identification of organizations as required by the DoD. This identifier will be used to identify all organizations within the DOD and non-DOD organizations to include, but not limited to, U.S. and foreign federal, civil and commercial entities.
MATERIAL-MATERIEL-HAZMAT-TYPE	Materiel_Hazmat_Type_Code	The specific code for a category of hazardous MATERIEL.
MATERIAL-MATERIEL-HAZMAT-TYPE	Material_Identifier	A designator of exactly one MATERIAL.

Entity Name	Attribute Name	Attribute Description
MATERIAL-MISCELLANEOUS-PROPERTY	Miscellaneous_Physical_Or_Chemical_Property_Identifier	A designator of exactly one MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY.
MATERIAL-MISCELLANEOUS-PROPERTY	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-MISCELLANEOUS-PROPERTY	Material_Miscellaneous_Property_Descriptive_Value_Text	A common language explanation of the value determined for the MATERIAL-MISCELLANEOUS-PROPERTY. This value may be partly numeric, but it must have a non-numeric component for example, Typically 3%, Varies from lot to lot, Below detectable amount, or Below legal maximum. Note: A purely numeric value will be recorded in attribute Material_Miscellaneous_Property_Quantity, instead of this one.
MATERIAL-MISCELLANEOUS-PROPERTY	Material_Miscellaneous_Property_Quantity	The value determined for the MATERIAL-MISCELLANEOUS-PROPERTY.
MATERIAL-MISCELLANEOUS-PROPERTY	Material_Miscellaneous_Property_Start_Date	The first effective calendar day of the MATERIAL-MISCELLANEOUS-PROPERTY.
MATERIAL-MISCELLANEOUS-PROPERTY	Material_Miscellaneous_Property_Stop_Date	The last effective calendar day of the MATERIAL-MISCELLANEOUS-PROPERTY.
MATERIAL-MISCELLANEOUS-PROPERTY	Material_Miscellaneous_Property_Determining_Organization_Identifier	A designator of the ORGANIZATION that drew the relevant conclusion(s).
MATERIAL-MISCELLANEOUS-PROPERTY	Material_Miscellaneous_Property_Unit_Of_Measure_Identifier	A designator of the scale of the magnitude of the MATERIAL-MISCELLANEOUS-PROPERTY as quantified by the Miscellaneous_Physical_Or_Chemical_Property_Quantity.
MATERIAL-ODOR-THRESHOLD-EVALUATION	Odor_Threshold_Evaluation_Method_Identifier	A designator of exactly one ODOR-THRESHOLD-EVALUATION-METHOD.
MATERIAL-ODOR-THRESHOLD-EVALUATION	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-ODOR-THRESHOLD-EVALUATION	Material_Odor_Threshold_Evaluation_Distinguishing_Identifier	A discriminator that designates one MATERIAL-ODOR-THRESHOLD-EVALUATION among all others for the same MATERIAL.
MATERIAL-ODOR-THRESHOLD-EVALUATION	Material_Odor_Threshold_Evaluation_Quantity	The lowest concentration of the vapors of the MATERIAL in air that can be smelled by a typical health person who can smell it at some concentration.
MATERIAL-ODOR-	Material_Odor_Threshold_Evauation_Date	The calendar day that the MATERIAL-ODOR-THRESHOLD-

Entity Name	Attribute Name	Attribute Description
THRESHOLD-EVALUATION		EVALUATION was officially completed.
MATERIAL-ODOR-THRESHOLD-EVALUATION	Material_Odor_Threshold_Evaluation_Unit_Of_Measure_Identifier	A designator of the scale used by the MATERIAL-ODOR-THRESHOLD-EVALUATION for the magnitude of the minimum concentration of the relevant MATERIAL that can be smelled by a person for example, for parts per million (ppm) or milligrams per cubic meter (mg/m3).
MATERIAL-ODOR-THRESHOLD-EVALUATION	Material_Odor_Threshold_Evaluation_Organization_Identifier	A designator of the ORGANIZATION that drew the relevant conclusion(s).
MATERIAL-SAFE-HANDLING-PRACTICE	Safe_Handling_Practice_Identifier	A designator of exactly one SAFE-HANDLING-PRACTICE.
MATERIAL-SAFE-HANDLING-PRACTICE	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-STORAGE-PRACTICE	Storage_Practice_Identifier	A designator of exactly one STORAGE-PRACTICE.
MATERIAL-STORAGE-PRACTICE	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-TEMPERATURE-THRESHOLD	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL-TEMPERATURE-THRESHOLD	Material_Temperature_Threshold_Description_Text	An explanation of the meaning of the heat limit for the MATERIAL established via the MATERIAL-TEMPERATURE-THRESHOLD.
MATERIAL-TEMPERATURE-THRESHOLD	Material_Temperature_Threshold_Temperature	The hotness of the relevant MATERIAL at the MATERIAL-TEMPERATURE-THRESHOLD.
MATERIAL-TEMPERATURE-THRESHOLD	Material_Temperature_Threshold_Type_Name	A commonly understood term for the kind of MATERIAL-TEMPERATURE-THRESHOLD. Examples are Autoignition Point, Decomposition Point, Initial Boiling Point, and Melting Point.
MATERIAL-TEMPERATURE-THRESHOLD	Material_Temperature_Threshold_Unit_Of_Measure_Identifier	A designator of the scale used for the magnitude of the MATERIAL-TEMPERATURE-THRESHOLD for example, for Degrees Centigrade, Degrees Fahrenheit, Degrees Kelvin, or Degrees Celsius.
MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD	Materiel_Catalog_Item_Material_Period_Stop_Date	The last calendar day of the MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD.
MATERIEL-CATALOG-ITEM-	Materiel_Catalog_Item_Material_Period_Start_Date	The first calendar day of the MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD.

Entity Name	Attribute Name	Attribute Description
MATERIAL-PERIOD		
MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD	Material_Identifier	A designator of exactly one MATERIAL.
MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD	Materiel_Catalog_Item_Identifier	A character string that specifies a specific item that may be purchased or produced by DoD that is unique either by composition or container.
MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY	Miscellaneous_Physical_Or_Chemical_Property_Details_Text	A thorough description of the MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY.
MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY	Miscellaneous_Physical_Or_Chemical_Property_Identifier	A designator of exactly one MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY.
MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY	Miscellaneous_Physical_Or_Chemical_Property_Name	A commonly understood term for the MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY.
MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY	Miscellaneous_Physical_Or_Chemical_Property_Summary_Text	A brief description of the MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY.
MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	Physical_Condition_Unit_Of_Measure_Identifier	A designator of the scale of the magnitude of the value to which the PHYSICAL-CONDITION that must be held constant for the MATERIAL-MISCELLANEOUS-PROPERTY to be valid.
MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	Miscellaneous_Physical_Or_Chemical_Property_Identifier	A designator of exactly one MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY.
MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	Miscellaneous_Property_Material_Condition_Descriptive_Value_Text	A common language explanation of the value determined for the MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION. This value may be partly numeric, but it must have a non-numeric component for example, Less than half way between the boiling point and the freezing point of the gas at the surrounding pressure .
MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	Miscellaneous_Property_Material_Condition_Distinguishing_Identifier	A discriminator that designates one MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION among all others for the same MATERIAL-MISCELLANEOUS-PROPERTY and PHYSICAL-CONDITION.
MISCELLANEOUS-	Miscellaneous_Property_Material_Condition_Primary_Material_Indicator	A character string that identifies the MISCELLANEOUS-

Entity Name	Attribute Name	Attribute Description
PROPERTY-MATERIAL-CONDITION		PROPERTY-MATERIAL-CONDITION as being one for the MATERIAL for which the MATERIAL-MISCELLANEOUS-PROPERTY is determined, as opposed to being for a different MATERIAL involved in the determination. For example, the property of solubility of table salt in water would have the temperature of the water as a secondary MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION.
MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	Miscellaneous_Property_Material_Condition_Quantity	The value that must be constant as the MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION.
MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	Physical_Condition_Identifier	A designator of exactly one PHYSICAL-CONDITION.
MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	Material_Identifier	A designator of exactly one MATERIAL.
NON-CONTAINING-COMPONENT	Object_Component_Distinguishing_Identifier	A discriminator that designates one OBJECT-COMPONENT among all others for the same relevant containing OBJECT.
NON-CONTAINING-COMPONENT	Object_Identifier	A designator of exactly one OBJECT.
NON-CONTAINING-COMPONENT	Non_Containing_Component_Contained_Indicator	A character string that designates whether the NON-CONTAINING-COMPONENT acts as a contained component, or is merely attached to the relevant OBJECT.
NONPICTOGRAM-BASED-HAZARDOUS-MATERIAL-CATEGORY	Hazardous_Material_Category_Identifier	A designator of exactly one HAZARDOUS-MATERIAL-CATEGORY.
NOTE-TO-PHYSICIAN	Note_To_Physician_Identifier	A designator of exactly one NOTE-TO-PHYSICIAN.
NOTE-TO-PHYSICIAN	Note_To_Physician_Details_Text	The content of the NOTE-TO-PHYSICIAN, that is, a full explanation for health care professionals on how to treat persons exposed to a relevant substance. Included is relevant information on antidotes, specific treatments, diagnostic procedures outside of usual and customary practices administered by health care professionals, clinical testing, medical monitoring for delayed effects, and procedures that may be affected by pre existing medical conditions and involve a medical judgment.

Entity Name	Attribute Name	Attribute Description
NOTE-TO-PHYSICIAN	Note_To_Physician_Predefined_Indicator	A character string that identifies the NOTE-TO--PHYSICIAN as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related NOTE-TO-PHYSICIAN
OBJECT	Object_Identifier	A designator of exactly one OBJECT.
OBJECT	Object_Separability_Indicator	A character string that identifies whether any parts of the OBJECT are physically distinct and can be stored or transported apart from all other components without destroying the integrity and usefulness of the part in its functioning of the whole object. For example, a bottle of window washing fluid would not be separable. A window washing set containing a bottle of washing fluid and a sponge would be separable. A bottle of mouthwash with two chemicals in side-by-side inner bottles that mix together when poured would not separable. A slice of freeze dried Neapolitan ice cream would not be separable.
OBJECT	Object_Volatile_Organic_Compound_As_Applied_Ratio_Quantity	The mass per unit volume of total carbon-containing chemicals that evaporate readily at standard temperature and pressure when a portion of the contents of the OBJECT are used in the specified way. Typically, this information is relevant only for a kit having component SUBSTANCEs that are mixed in specified ratios.
OBJECT	Object_Volatile_Organic_Compound_As_Applied_Ratio_Unit_Of_Measure_Identifier	A designator of the scale of the magnitude of the weight per unit volume as quantified by the Object_Volatile_Organic_Compound_As_Applied_Ratio_Quantity.
OBJECT	Object_Volatile_Organic_Compound_As_Applied_Test_Method_Name	A commonly understood term for or a reference identifying the application method used to determine the Object_Volatile_Organic_Compound_As_Applied_Ratio_Quantity. For example, Southern California Air Quality Management District Rule 443.1.
OBJECT	Object_Volatile_Organic_Compound_As_Applied_Test_Method_Details_Text	A thorough explanation of the application method used to determine the Object_Volatile_Organic_Compound_As_Applied_Ratio_Quantity.
OBJECT	Object_Volatile_Organic_Compound_As_Applied_Test_Method_Summary_Text	A brief explanation of the application method used to determine the Object_Volatile_Organic_Compound_As_Applied_Ratio_Quantity.
OBJECT-COMPONENT	Object_Component_Distinguishing_Identifier	A discriminator that designates one OBJECT-COMPONENT among all others for the same relevant containing OBJECT.
OBJECT-COMPONENT	Object_Identifier	A designator of exactly one OBJECT.
OBJECT-COMPONENT	Object_Component_Material_Identifier	A designator of the MATERIAL that is a direct constituent of the relevant OBJECT.
OBJECT-COMPONENT	Object_Component_Containment_Role_Indicator	A character string that signifies whether the OBJECT-COMPONENT acts a vessel for another OBJECT-COMPONENT

Entity Name	Attribute Name	Attribute Description
		within the same OBJECT as such an item will be received, not as it might exist during or after use, creative maintenance or repair. Note: An OBJECT acting as an OBJECT-COMPONENT can act as a CONTAINED-COMPONENT for an encompassing OBJECT and also be an OBJECT that has other OBJECT-COMPONENTs that act as CONTAINING-COMPONENTs for yet other direct constituents of the second OBJECT.
OBJECT-COMPONENT	Object_Component_Weight_Quantity	The total mass of the OBJECT-COMPONENT, regardless of the number of OBJECTs that make it up. For example, if the OBJECT-COMPONENT is Lead Plate, and there are six (6) plates each weighing two (2) pounds, the Object_Component_Weight_Quantity would be twelve (12) pounds.
OBJECT-COMPONENT	Object_Component_Temperature_Quantity	The specified internal heat of the OBJECT-COMPONENT for which volume or weight measurements are specified when the specified internal heat is not standard temperature. If the specified temperature is standard temperature (70 degrees Fahrenheit; 21 degrees Centigrade), the attribute will have a null value.
OBJECT-COMPONENT	Object_Component_Object_Count_Quantity	The number of direct constituent OBJECTs contained within the relevant encompassing OBJECT. For example, if the OBJECT-COMPONENT is Lead Plate, six (6) Lead Plates may be direct constituents of the relevant OBJECT.
OBJECT-COMPONENT	Object_Component_Volume_Quantity	The space occupied by OBJECT-COMPONENT at standard temperature and pressure unless another temperature and/or pressure is specified. The total mass of the OBJECT-COMPONENT, regardless of the number of OBJECTs that make it up. For example, if the OBJECT-COMPONENT is Lead Plate, and there are six (6) plates each occupying 5 cubic inches, the Object_Component_Volume_Quantity would be twelve (20) pounds.
OBJECT-COMPONENT	Object_Component_Volume_Unit_Of_Measure_Identifier	A designator of the scale for the magnitude for the space occupied by the OBJECT-COMPONENT as represented in the Object_Component_Volume_Quantity.
OBJECT-COMPONENT	Object_Component_Temperature_Unit_Of_Measure_Identifier	A designator of the scale for the magnitude of the hotness of the MEASURED-COMPONENT for which volume or weight measurements are specified when the specified hotness is not standard temperature.
OBJECT-COMPONENT	Object_Component_Weight_Unit_Of_Measure_Identifier	A designator of the scale of the magnitude used for the mass of the MEASURED-COMPONENT.
ODOR	Odor_Name	A commonly used term for the ODOR. Examples include fresh, pungent, acrid, fragrant, lemony, and like rotten eggs.
ODOR	Odor_Description_Text	An explanation of the physiological sensations experienced when a

Entity Name	Attribute Name	Attribute Description
		person smells the odor. Examples are: Slightly clean and fresh, Strongly acrid, or Smells like rotten eggs.
ODOR-THRESHOLD-EVALUATION-METHOD	Odor_Threshold_Evaluation_Method_Identifier	A designator of exactly one ODOR-THRESHOLD-EVALUATION-METHOD.
ODOR-THRESHOLD-EVALUATION-METHOD	Odor_Threshold_Evaluation_Method_Details_Text	A thorough explanation of the ODOR-THRESHOLD-EVALUATION-METHOD.
ODOR-THRESHOLD-EVALUATION-METHOD	Odor_Threshold_Evaluation_Method_Name	A commonly understood term for the ODOR-THRESHOLD-EVALUATION-METHOD.
ODOR-THRESHOLD-EVALUATION-METHOD	Odor_Threshold_Evaluation_Method_Summary_Text	A brief explanation of the ODOR-THRESHOLD-EVALUATION-METHOD.
ORGANIZATION-HAZARD-CATEGORY	Hazard_Category_Identifier	A designator of exactly one HAZARD-CATEGORY.
ORGANIZATION-HAZARD-CATEGORY	Organization_Unique_Identifier	A character string that identifies a public or private organizational entity that supports a given mission, function, business objective or other criteria. The creation of an Organization Unique Identifier (OUID), a unique, simple and nonintelligent (containing no embedded information or smart codes) identifier will support standardized unique identification of organizations as required by the DoD. This identifier will be used to identify all organizations within the DOD and non-DOD organizations to include, but not limited to, U.S. and foreign federal, civil and commercial entities.
ORGANIZATION-SUBSTANCE-FAMILY	Substance_Family_Identifier	A designator of exactly one SUBSTANCE-FAMILY.
ORGANIZATION-SUBSTANCE-FAMILY	Organization_Substance_Family_Organization_Identifier	A designator of the ORGANIZATION that established the ORGANIZATION-SUBSTANCE-FAMILY.
ORGANIZATION-SUBSTANCE-SYNONYM	Substance_Synonym_Identifier	A designator of exactly one SUBSTANCE-SYNONYM.
ORGANIZATION-SUBSTANCE-SYNONYM	Substance_Synonym_Promulgating_Organization_Identifier	A designator of the ORGANIZATION that established the ORGANIZATION-SUBSTANCE-SYNONYM.
PACKAGING-TYPE	Packaging_Type_Identifier	A designator of exactly one PACKAGING-TYPE.
PACKAGING-TYPE	Packaging_Type_Description_Text	An explanation of the nature and general characteristics of the PACKAGING-TYPE.
PACKAGING-TYPE	Packaging_Type_Name	A commonly used term for the PACKAGING-TYPE for example, Drum, Bottle, Can, Bag, and Aerosol Can.
PACKAGING-TYPE	Packaging_Type_Code	A character string that stands for the PACKAGING-TYPE for

Entity Name	Attribute Name	Attribute Description
		example, DR for Drum.
PERSONAL-PROTECTIVE-EQUIPMENT	Personal_Protective_Equipment_Identifier	A designator of exactly one piece of PERSONAL-PROTECTIVE-EQUIPMENT.
PERSONAL-PROTECTIVE-EQUIPMENT	Personal_Protective_Equipment_Details_Text	A thorough description of the PERSONAL-PROTECTIVE-EQUIPMENT and its use. For example, When using gloves, use the best barrier material, preferably butyl rubber or neoprene.
PERSONAL-PROTECTIVE-EQUIPMENT	Personal_Protective_Equipment_Name	A commonly used term for the piece of PERSONAL-PROTECTIVE-EQUIPMENT. Examples Include: Safety helmets Gloves, Safety goggles, Blast Shield, Hard Hat, Safety Footwear, and Safety Harness.
PERSONAL-PROTECTIVE-EQUIPMENT	Personal_Protective_Equipment_Predefined_Indicator	A character string that identifies the PERSONAL-PROTECTIVE-EQUIPMENT as a either Standard (coming from an established, predefined list) or Individualized (unique to a specific SUBSTANCE).
PERSONAL-PROTECTIVE-EQUIPMENT	Personal_Protective_Equipment_Summary_Text	A brief description of the PERSONAL-PROTECTIVE-EQUIPMENT. For example, Use gloves made of butyl rubber or neoprene.
PHYSICAL-CONDITION	Physical_Condition_Identifier	A designator of exactly one PHYSICAL-CONDITION.
PHYSICAL-CONDITION	Physical_Condition_Details_Text	A thorough description of the PHYSICAL-CONDITION.
PHYSICAL-CONDITION	Physical_Condition_Name	A commonly understood term for the PHYSICAL-CONDITION for example, Standard Pressure or Temperature of 10 Degrees Centigrade.
PHYSICAL-CONDITION	Physical_Condition_Summary_Text	A brief description of the PHYSICAL-CONDITION.
PICTOGRAM-BASED-HAZARDOUS-MATERIAL-CATEGORY	Hazardous_Material_Category_Identifier	A designator of exactly one HAZARDOUS-MATERIAL-CATEGORY.
RADIOISOTOPE	Radioisotope_Half_Life_Unit_Of_Measure_Identifier	A designator of the scale used for the magnitude of the Radioisotope_Half_Life_Time.
RADIOISOTOPE	Radioisotope_Half_Life_Quantity	The time required for 50% of the nuclei in a sample of the RADIOISOTOPE to undergo radioactive decay.
RADIOISOTOPE	Radioisotope_Identifier	A designator of exactly one RADIOISOTOPE.
RADIOISOTOPE-DECAY-EMISSION	Isotope_Identifier	A designator of exactly one ISOTOPE.
RADIOISOTOPE-DECAY-EMISSION	Radioisotope_Decay_Emission_Distinguishing_Identifier	A discriminator that designates one RADIOISOTOPE-DECAY-EMISSION among all others for the same RADIOISOTOPE.
RADIOISOTOPE-	Radioisotope_Decay_Emission_Energy_Quantity	The maximum capability of the RADIOISOTOPE-DECAY-

Entity Name	Attribute Name	Attribute Description
DECAY-EMISSION		EMISSION to perform work.
RADIOISOTOPE-DECAY-EMISSION	Radioisotope_Decay_Emission_Type_Name	A commonly used term for the RADIOISOTOPE-DECAY-EMISSION for example, Beta Particle, Alpha Particle, Gamma Ray, and Positron.
RADIOISOTOPE-DECAY-EMISSION	Radioisotope_Decay_Emission_Energy_Unit_Of_Measure_Identifier	A designator for the scale used for the magnitude of the maximum capability of the RADIOISOTOPE-DECAY-EMISSION to perform work.
RADIOISOTOPE-DECAY-EMISSION	Radioisotope_Identifier	A designator of exactly one RADIOISOTOPE.
RADIOISOTOPE-DECAY-ISOTOPE	Isotope_Identifier	A designator of exactly one ISOTOPE.
RADIOISOTOPE-DECAY-ISOTOPE	Radioisotope_Identifier	A designator of exactly one RADIOSOTOPE.
REACTION-EFFECT	Reaction_Effect_Identifier	A designator of exactly one REACTION-EFFECT.
REACTION-EFFECT	Reaction_Effect_Details_Text	A thorough explanation of the REACTION-EFFECT.
REACTION-EFFECT	Reaction_Effect_Name	A commonly understood term for the REACTION-EFFECT.
REACTION-EFFECT	Reaction_Effect_Predefined_Indicator	A character string that identifies the REACTION-EFFECT as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related SUBSTANCE-REACTION).
REACTION-EFFECT	Reaction_Effect_Summary_Text	A brief explanation of the REACTION-EFFECT.
REACTION-EFFECT	Reaction_Effect_Typically_Considered_Undesirable_Indicator	A character string that identifies whether the REACTION-EFFECT is one that the DoD generally finds to be objectionable.
REGULATION	Regulation_Identifier	A designator of exactly one REGULATION.
REGULATION	Regulation_Promulgating_Organization_Identifier	A designator of the ORGANIZATION that established the REGULATION.
REGULATION	Regulation_Stop_Date	The last effective calendar day of the REGULATION.
REGULATION	Regulation_CFR_Citation_Identifier	A character string that designates the REGULATION as it appears in the United States Code of Federal Regulations. Applies only to a United States Federal REGULATION.
REGULATION	Regulation_Name	The title of the REGULATION.
REGULATION	Regulation_Start_Date	The first effective calendar day of the REGULATION.
REGULATION-HAZARD-CATEGORY	Hazard_Category_Identifier	A designator of exactly one HAZARD-CATEGORY.
REGULATION-HAZARD-CATEGORY	Regulation_Identifier	A designator of exactly one REGULATION.
REGULATION-REQUIREMENT	Regulation_Requirement_Stop_Date	The last calendar day of the REGULATION-REQUIREMENT.
REGULATION-REQUIREMENT	Regulation_Requirement_Start_Date	The first calendar day of the REGULATION-REQUIREMENT.
REGULATION-	Regulation_Identifier	A designator of exactly one REGULATION.

Entity Name	Attribute Name	Attribute Description
REQUIREMENT		
REGULATION-REQUIREMENT	Regulation_Requirement_De_Minimus_Weight_Percent_Quantity	The largest concentration by weight of a relevant SUBSTANCE as an ingredient that can be excluded from calculations of quantities under the REGULATION-REQUIREMENT.
REGULATION-REQUIREMENT	Regulation_Requirement_Description_Text	An explanation of the salient aspects of the REGULATION-REQUIREMENT as it applies to relevant SUBSTANCEs. Among other things, it may include information the correct use of the reporting code, limit weight quantity, de minimus quantity, or physical form.
REGULATION-REQUIREMENT	Regulation_Requirement_Limit_Weight_Quantity	The smallest mass of a relevant SUBSTANCE that, when reached, requires that the REGULATION-REQUIREMENT be met in the manner as described in the Regulation_Requirement_Text. For example, the quantity might be a threshold for reporting under the REGULATION-REQUIREMENT.
REGULATION-REQUIREMENT	Regulation_Requirement_Physical_Form_Text	A description of the characteristics of relevant SUBSTANCEs that will limit the quantities that are covered by the REGULATORY-REQUIRMENT. For example, the REGULATORY-REQUIRMENT applies only to SUBSTANCEs in solution.
REGULATION-REQUIREMENT	Regulation_Requirement_Limit_Weight_Unit_Of_Measure_Identifier	A designator of the scale of the magnitude used for the Regulation_Requirement_Limit_Weight_Quantity.
REGULATION-SUBSTANCE-FAMILY	Substance_Family_Identifier	A designator of exactly one SUBSTANCE-FAMILY.
REGULATION-SUBSTANCE-FAMILY	Regulation_Substance_Family_Regulation_Identifier	A designator of the REGULATION that established the REGULATION-SUBSTANCE-FAMILY.
REGULATION-SUBSTANCE-SYNONYM	Substance_Synonym_Identifier	A designator of exactly one SUBSTANCE-SYNONYM.
REGULATION-SUBSTANCE-SYNONYM	Substance_Synonym_Promulgating_Regulation_Identifier	A designator of the REGULATION that established the REGULATION-SUBSTANCE-SYNONYM.
ROUTE-OF-EXPOSURE	Route_Of_Exposure_Name	A commonly used term for the ROUTE-OF-EXPOSURE. Known values are Eye Contact, Skin Contact, Inhalation, and Ingestion.
SAFE-HANDLING-PRACTICE	Safe_Handling_Practice_Identifier	A designator of exactly one SAFE-HANDLING-PRACTICE.
SAFE-HANDLING-PRACTICE	Safe_Handling_Practice_Details_Text	A thorough description of the SAFE-HANDLING-PRACTICE.
SAFE-HANDLING-PRACTICE	Safe_Handling_Practice_Name	A commonly understood term for the SAFE-HANDLING-PRACTICE.
SAFE-HANDLING-PRACTICE	Safe_Handling_Practice_Predefined_Indicator	A character string that identifies the SAFE-HANDLING-PRACTICE as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related

Entity Name	Attribute Name	Attribute Description
		MATERIAL).
SAFE-HANDLING-PRACTICE	Safe_Handling_Practice_Summary_Text	A brief description of the SAFE-HANDLING-PRACTICE.
SECONDARY-MATERIAL-MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	Miscellaneous_Physical_Or_Chemical_Property_Identifier	A designator of exactly one MISCELLANEOUS-PHYSICAL-OR-CHEMICAL-PROPERTY.
SECONDARY-MATERIAL-MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	Miscellaneous_Property_Material_Condition_Distinguishing_Identifier	A discriminator that designates one MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION among all others for the same MATERIAL-MISCELLANEOUS-PROPERTY and PHYSICAL-CONDITION.
SECONDARY-MATERIAL-MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	Physical_Condition_Identifier	A designator of exactly one PHYSICAL-CONDITION.
SECONDARY-MATERIAL-MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	Material_Identifier	A designator of exactly one MATERIAL.
SECONDARY-MATERIAL-MISCELLANEOUS-PROPERTY-MATERIAL-CONDITION	Secondary_Material_Identifier	A designator of the material that is not being measured directly.
SIGN-SYMPTOM	Sign_Symptom_Identifier	A designator of exactly one SIGN-SYMPTOM.
SIGN-SYMPTOM	Sign_Symptom_Details_Text	A thorough description of the SIGN-SYMPTOM.
SIGN-SYMPTOM	Sign_Symptom_Name	A commonly understood term for the SIGN-SYMPTOM.
SIGN-SYMPTOM	Sign_Symptom_Predefined_Indicator	A character string that identifies the SIGN-SYMPTOM as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related SUBSTANCE).
SIGN-SYMPTOM	Sign_Symptom_Summary_Text	A brief description of the SIGN-SYMPTOM.
SIGNAL-WORD	Signal_Word_Name	The text of the SIGNAL-WORD.

Entity Name	Attribute Name	Attribute Description
SIGNAL-WORD	Signal_Word_Details_Text	A thorough explanation of the meaning of the SIGNAL-WORD.
SIGNAL-WORD	Signal_Word_Predefined_Indicator	A character string that identifies the SIGNAL-WORD as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related SUBSTANCE).
SIGNAL-WORD	Signal_Word_Summary_Text	A brief explanation of the meaning of the SIGNAL-WORD.
SOLID	Solid_Identifier	A designator of exactly one SOLID.
SOLID	Solid_Granulated_Indicator	A designator that identifies the SOLID as either Granulated (visually consisting of small solid particles, each that has a size, shape, and micro structure) or Gelatinous (visually having a soft, deformable shape).
STABILIZING-GROUP	Stabilizing_Group_Identifier	A designator of exactly one STABILIZING-GROUP.
STABILIZING-GROUP	Stabilizing_Group_Details_Text	A thorough explanation of the STABILIZING-GROUP and the circumstances under which it inhibits SUBSTANCE-REACTIONs.
STABILIZING-GROUP	Stabilizing_Group_Name	A commonly-understood term for the STABILIZING-GROUP.
STABILIZING-GROUP	Stabilizing_Group_Summary_Text	A brief explanation of the STABILIZING-GROUP and the circumstances under which it inhibits SUBSTANCE-REACTIONs.
STABILIZING-GROUP-SUBSTANCE	Stabilizing_Group_Identifier	A designator of exactly one STABILIZING-GROUP.
STABILIZING-GROUP-SUBSTANCE	Substance_Identifier	A designator of exactly one SUBSTANCE.
STORAGE-PRACTICE	Storage_Practice_Identifier	A designator of exactly one STORAGE-PRACTICE.
STORAGE-PRACTICE	Storage_Practice_Details_Text	A thorough description of the STORAGE-PRACTICE.
STORAGE-PRACTICE	Storage_Practice_Name	A commonly understood term for the STORAGE-PRACTICE.
STORAGE-PRACTICE	Storage_Practice_Predefined_Indicator	A character string that identifies the STORAGE-PRACTICE as a either Standardized (coming from an established, predefined list) or Individualized (unique to the specific related MATERIAL).
STORAGE-PRACTICE	Storage_Practice_Summary_Text	A brief description of the STORAGE-PRACTICE.
SUBSTANCE	Substance_State_Complexity_Type_Name	A commonly understood term for the relevant the physical structure of the SUBSTANCE. One option is: Substance in One Physical State for a SUBSTANCE that is entirely a gas, liquid, solid, or plasma.
SUBSTANCE	Substance_Water_N_Octanol_Partition_Coefficient_Quantity	The ratio, expressed as a base 10 logarithm, of the solubility of the SUBSTANCE in water to its solubility in oil at 25 degrees Celsius.
SUBSTANCE	Substance_Volatile_Organic_Compound_Weight_Percent_Quantity	The fraction of the mass of carbon-containing chemicals that evaporate readily at standard temperature and pressure, expressed in hundredths, when compared to the mass of a unit amount of the relevant SUBSTANCE that contains those chemicals.
SUBSTANCE	Substance_Volatile_Organic_Compound_Volume_Percent_Quantity	The fractional amount of space occupied by carbon-containing chemicals that evaporate readily at standard temperature and pressure, expressed in hundredths, when compared to a unit amount of space occupied by the relevant SUBSTANCE that contains those

Entity Name	Attribute Name	Attribute Description
		chemicals.
SUBSTANCE	Substance_Stability_Normal_Conditions_Text	A description of the normal conditions under which the SUBSTANCE's stability is determined. Typically, the description would include the relevant ambient temperature and pressure or the anticipated storage and handling conditions. For example, 70 degrees Fahrenheit (21 degrees Centigrade) and 14.7 psig (760 mm Hg) for something to be stored and handled at standard temperature and pressure.
SUBSTANCE	Substance_Stable_Indicator	A character string that identifies whether the SUBSTANCE remains unchanged or undergoes changes during storage or use under standard ambient temperature {70 degrees Fahrenheit (also 21 degrees Centigrade)} and pressure {14.7 psi (also 760 mm Hg)} or other anticipated storage and handling conditions.
SUBSTANCE	Substance_Solid_Percent_By_Weight_Quantity	The fraction of the mass of the SUBSTANCE that will adhere to or become part of a solid object when the rest of the SUBSTANCE evaporates.
SUBSTANCE	Substance_Solid_Percent_By_Volume_Quantity	The fractional amount of space occupied by that portion of the SUBSTANCE that will adhere to or become part of a solid object when the rest of the SUBSTANCE evaporates.
SUBSTANCE	Substance_Self_Reactive_Indicator	A character string that identifies whether 1) the SUBSTANCE may undergo intense condensation or decomposition reactions when exposed to increase in temperature, pressure, friction, or mechanical shock and 2) can cause a fire or explosion. Examples of self reactive SUBSTANCEs are nitroglycerine, picric acid, hydrogen peroxide solutions (91% by weight), many organize peroxides, and some epoxy compounds.
SUBSTANCE	Substance_Inert_Indicator	A character string that identifies whether the SUBSTANCE will undergo chemical change or transformation under typical conditions of storage, transportation, or use. Options are Inert (for a SUBSTANCE that will not undergo chemical change or transformation) and Reactive (for a SUBSTANCE that will undergo chemical change or transformation).
SUBSTANCE	Substance_Considered_Environmentally_Persistent_Indicator	A character string that identifies the relative tendency of the SUBSTANCE to remain substantially undegraded in the environment after being introduced there. Options are: Persistent if the SUBSTANCE tends to remain undegraded in the environment for months or years. Not Persistent if the SUBSTANCE tends to degrade or otherwise leave the environment within days or weeks.
SUBSTANCE	Substance_Color_Name	A commonly used term for the visual hue of the SUBSTANCE. Examples might be Blue, Red, Forest Green, Brick Brown, and Light Grey.

Entity Name	Attribute Name	Attribute Description
SUBSTANCE	Substance_Clarity_Name	A commonly understood term or short description for the visual transparency of the SUBSTANCE. Examples include Transparent, Translucent, Opaque, Clear, Cloudy, Slightly Cloudy, and Muddy.
SUBSTANCE	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE	Substance_Gross_Structural_Type_Name	A commonly understood term for the macroscopic organization of the direct constituent(s) other than the physical state(s) of the constituent(s).
SUBSTANCE	Substance_Volatile_Organic_Compound_Volume_Non_Numeric_Quantity_Text	A free-form expression that conveys the approximate fractional amount of space occupied by carbon-containing chemicals that evaporate readily at standard temperature and pressure when compared to a unit amount of space occupied by the relevant SUBSTANCE that contains those chemicals for example, Trace, Less than 10%.
SUBSTANCE	Substance_Volatile_Organic_Compound_Weight_Non_Numeric_Quantity_Text	A free-form expression that conveys the approximate fraction of the mass of carbon-containing chemicals that evaporate readily at standard temperature and pressure, expressed in hundredths, when compared to the mass of a unit amount of the relevant SUBSTANCE that contains those chemicals for example, Trace, Less than 10%.
SUBSTANCE	Substance_Radioactive_Decay_Rate	The relative proportion of nuclear decay that occurs in a quantity of the SUBSTANCE. Typically it is measured in becquerel (Bq) or curies (Ci).
SUBSTANCE	Substance_Radioactive_Decay_Rate_Unit_Of_Measure_Identifier	A designator of exactly one UNIT-OF-MEASURE.
SUBSTANCE-ACCIDENTAL-RELEASE-MEASURE	Accidental_Release_Measure_Identifier	A designator of exactly one ACCIDENTAL-RELEASE-MEASURE.
SUBSTANCE-ACCIDENTAL-RELEASE-MEASURE	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT	Adverse_Environmental_Effect_Identifier	A designator of exactly one ADVERSE-ENVIRONMENTAL-EFFECT.
SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT	Substance_Adverse_Environmental_Effect_Details_Text	A thorough explanation of the SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT.
SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT	Substance_Adverse_Environmental_Effect_Name	A commonly understood term for the SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT.

Entity Name	Attribute Name	Attribute Description
SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT	Substance_Adverse_Environmental_Effect_Summary_Text	A brief explanation of the SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT.
SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION	Substance_Adverse_Enfironmental_Effect_Determination_Distinguishing_Identifier	A discriminator that designates one SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION from all others for the same SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT.
SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION	Substance_Adverse_Enfironmental_Effect_Determination_Organization_Identifier	A designator of the ORGANIZATION that drew the conclusions involved in the SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION.
SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-ADVERSE-ENVIRONMENTAL-EFFECT-DETERMINATION	Adverse_Environmental_Effect_Identifier	A designator of exactly one ADVERSE-ENVIRONMENTAL-EFFECT.
SUBSTANCE-ADVERSE-HEALTH-EFFECT	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT.
SUBSTANCE-ADVERSE-HEALTH-EFFECT	Substance_Adverse_Health_Effect_Summary_Text	A brief explanation of the SUBSTANCE-ADVERSE-HEALTH-EFFECT.
SUBSTANCE-ADVERSE-HEALTH-EFFECT	Substance_Adverse_Health_Effect_Name	A commonly understood term for the SUBSTANCE-ADVERSE-HEALTH-EFFECT.
SUBSTANCE-	Substance_Adverse_Health_Effect_Details_Text	A through explanation of the SUBSTANCE-ADVERSE-HEALTH-

Entity Name	Attribute Name	Attribute Description
ADVERSE-HEALTH-EFFECT		EFFECT.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART	Adverse_Health_Effect_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART	Body_Part_Name	A commonly-used term for the BODY-PART. For example, Liver, Kidney, Skin, Lung, and Central Nervous System.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART-DETERMINATION	Substance_Adverse_Health_Effect_Body_Part_Determination_Organization_Identifier	A designator of the ORGANIZATION that drew the conclusion(s) involved in the SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART-DETERMINATION.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART-DETERMINATION	Substance_Adverse_Health_Effect_Body_Part_Determination_Distinguishing_Id	A discriminator that designates one SUBSTANCE-ADVERSE-HEALTHL-EFFECT-BODY-PART-DETERMINATION among all others for the same SUBSTANCE-ADVERSE-HEALTHL-EFFECT-BODY-PART.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART-DETERMINATION	Substance_Adverse_Health_Effect_Body_Part_Determination_Start_Date	The first effective calendar day of the SUBSTANCE-ADVERSE-HEALTHL-EFFECT-BODY-PART-DETERMINATION.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART-DETERMINATION	Substance_Adverse_Health_Effect_Body_Part_Determination_Stop_Date	The last effective calendar day of the SUBSTANCE-ADVERSE-HEALTHL-EFFECT-BODY-PART-DETERMINATION.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART-DETERMINATION	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART-DETERMINATION	Adverse_Health_Effect_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-BODY-PART-DETERMINATION	Body_Part_Name	A commonly-used term for the BODY-PART. For example, Liver, Kidney, Skin, Lung, and Central Nervous System.
SUBSTANCE-ADVERSE-HEALTH-	Substance_Adverse_Health_Effect_Determination_Distinguishing_Identifier	A discriminator that designates one SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION among all others for the

Entity Name	Attribute Name	Attribute Description
EFFECT-DETERMINATION		same SUBSTANCE-ADVERSE-HEALTH-EFFECT.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Adverse_Health_Effect_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Substance_Adverse_Health_Effect_Determination_Organization_Identifier	A designator of the ORGANIZATION that drew the conclusion(s) involved in the SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Substance_Adverse_Health_Effect_Determination_Start_Date	The first effective calendar day of the SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION.
SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Substance_Adverse_Health_Effect_Determination_Stop_Date	The last effective calendar day of the SUBSTANCE-ADVERSE-HEALTH-EFFECT-DETERMINATION.
SUBSTANCE-AID-MEASURE	First_Aid_Measure_Identifier	A designator of exactly one FIRST-AID-MEASURE.
SUBSTANCE-AID-MEASURE	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-CONDENSATION	Substance_Reaction_Distinguishing_Identifier	A discriminator that designates one SUBSTANCE-REACTION among all others for the same original SUBSTANCE.
SUBSTANCE-CONDENSATION	Substance_Condensation_Type_Name	A commonly understood term for a kind of SUBSTANCE-CONDENSATION. One example is polymerization, which is a condensation type in which many identical small molecules (monomers) produce a large molecule (polymer) as well as heat and light. The SUBSTANCE-CONDENSATION of vinyl into polyvinyl chloride is a polymerization.
SUBSTANCE-CONDENSATION	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Start_Date	The first calendar day that the SUBSTANCE-EXPOSURE-LIMIT is valid as promulgated by the relevant ORGANIZATION.
SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Type_Name	A commonly understood term for the SUBSTANCE-EXPOSURE-LIMIT for example, Time Weighted Average or Short Term Exposure Limit.

Entity Name	Attribute Name	Attribute Description
SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Quantity	The numeric value of the SUBSTANCE-EXPOSURE-LIMIT.
SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Stop_Date	The last calendar day that the SUBSTANCE-EXPOSURE-LIMIT is valid as promulgated by the relevant ORGANIZATION.
SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Timeframe_Days_Quantity	The count of full 24 hour periods of cumulative duration over which the SUBSTANCE-EXPOSURE-LIMIT applies. The total cumulative duration is the sum of the time frames for days, hours, minutes, and seconds.
SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Timeframe_Hours_Quantity	The count of full 60 minute periods of cumulative duration, beyond any cumulative 24 hour periods, over which the SUBSTANCE-EXPOSURE-LIMIT applies. The total cumulative duration is the sum of the time frames for days, hours, minutes, and seconds.
SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Timeframe_Minutes_Quantity	The count of full 60 second periods of cumulative duration, beyond any cumulative 24 hour periods and hour periods, over which the SUBSTANCE-EXPOSURE-LIMIT applies. The total cumulative duration is the sum of the time frames for days, hours, minutes, and seconds.
SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Timeframe_Seconds_Quantity	The count of full 1/60 ths of a minute periods of cumulative duration, beyond any cumulative day, hour, and minute periods, over which the SUBSTANCE-EXPOSURE-LIMIT applies. The total cumulative duration is the sum of the time frames for days, hours, minutes, and seconds.
SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Unit_Of_Measure_Identifier	A designator of the scale employed to describe the magnitude of the SUBSTANCE-EXPOSURE-LIMIT. Typically, the unit is parts per million (ppm).
SUBSTANCE-EXPOSURE-LIMIT	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Type_Organization_Identifier	A designator of the ORGANIZATION that established the SUBSTANCE-EXPOSURE-LIMIT-TYPE.
SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Promulgating_Organization_Identifier	A designator of the ORGANIZATION that established the SUBSTANCE-EXPOSURE-LIMIT.
SUBSTANCE-EXPOSURE-LIMIT	Substance_Exposure_Limit_Description_Text	A statement providing details about the test that established the amount of the SUBSTANCE that resulted in the death of 50% of the test animals. Information may include the route of exposure, type of test animal, size of test population, or other information.
SUBSTANCE-EXPOSURE-LIMIT-TYPE	Substance_Exposure_Limit_Type_Name	A commonly understood term for the SUBSTANCE-EXPOSURE-LIMIT for example, Time Weighted Average or Short Term Exposure Limit .
SUBSTANCE-EXPOSURE-LIMIT-TYPE	Substance_Exposure_Limit_Type_Description_Text	An explanation of the SUBSTANCE-EXPOSURE-LIMIT-TYPE.

Entity Name	Attribute Name	Attribute Description
SUBSTANCE-EXPOSURE-LIMIT-TYPE	Substance_Exposure_Limit_Type_Short_Name	A commonly understood abbreviated term for the SUBSTANCE-EXPOSURE-LIMIT for example, TWA for a Time Weighted Average or STEL for a Short Term Exposure Limit.
SUBSTANCE-EXPOSURE-LIMIT-TYPE	Substance_Exposure_Limit_Type_Skin_Indicator	A character string that identifies whether the SUBSTANCE-EXPOSURE-LIMIT applies to exposure through the body-covering integument of a person. Options are Yes and No .
SUBSTANCE-EXPOSURE-LIMIT-TYPE	Substance_Exposure_Limit_Type_Organization_Identifier	A designator of the ORGANIZATION that established the SUBSTANCE-EXPOSURE-LIMIT-TYPE.
SUBSTANCE-FAMILY	Substance_Family_Identifier	A designator of exactly one SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY	Substance_Family_Start_Date	The first calendar day of SUBSTANCE-FAMILY effectiveness.
SUBSTANCE-FAMILY	Substance_Family_Type_Name	A commonly understood term for the kind of authority that promulgated the SUBSTANCE-FAMILY for example, an ORGANIZATION, a REGULATION, a law, or other (such as historical usage).
SUBSTANCE-FAMILY	Substance_Family_Name	A commonly understood term for the SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY	Substance_Family_Stop_Date	The last calendar day of SUBSTANCE-FAMILY effectiveness.
SUBSTANCE-FAMILY-INCOMPATIBLE-SUBSTANCE-FAMILY	Substance_Family_Incompatible_Substance_Family_First_Family_Identifier	A designator of exactly one SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY-INCOMPATIBLE-SUBSTANCE-FAMILY	Substance_Family_Incompatible_Substance_Family_Second_Family_Identifier	A designator of exactly one SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY-INCOMPATIBLE-SUBSTANCE-FAMILY	Substance_Family_Incompatible_Substance_Family_Possible_Result_Summary_Text	A brief explanation of the situation(s) that might cause the potentially hazardous effects of combining SUBSTANCES from the relevant incompatible SUBSTANCE-FAMILYs and of the hazardous effects, themselves.
SUBSTANCE-FAMILY-INCOMPATIBLE-SUBSTANCE-FAMILY	Substance_Family_Incompatible_Substance_Family_Possible_Result_Details_Text	A thorough explanation of the situation(s) that might cause the potentially hazardous effects of combining SUBSTANCES from the relevant incompatible SUBSTANCE-FAMILYs and of the hazardous effects, themselves.
SUBSTANCE-FAMILY-REGULATION-REQUIREMENT	Substance_Family_Identifier	A designator of exactly one SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY-REGULATION-REQUIREMENT	Substance_Family_Regulation_Requirement_Start_Date	The first calendar day of the SUBSTANCE-FAMILY-REGULATION-REQUIREMENT.

Entity Name	Attribute Name	Attribute Description
SUBSTANCE-FAMILY-REGULATION-REQUIREMENT	Substance_Family_Regulation_Requirement_Stop_Date	The last calendar day of the SUBSTANCE-FAMILY-REGULATION-REQUIREMENT.
SUBSTANCE-FAMILY-REGULATION-REQUIREMENT	Regulation_Identifier	A designator of exactly one REGULATION.
SUBSTANCE-FAMILY-REGULATION-REQUIREMENT	Regulation_Requirement_Start_Date	The first calendar day of the REGULATION-REQUIREMENT.
SUBSTANCE-FAMILY-REGULATION-REQUIREMENT	Substance_Family_Regulation_Requirement_Reporting_Code	A character string that stands for the relevant SUBSTANCE-FAMILY, as covered by the relevant REGULATION-REQUIREMENT, when documenting, for purposes of the REGULATION-REQUIREMENT, a SUBSTANCE that is a member of the SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-MEMBERSHIP	Substance_Family_Substance_Family_Membership_Include_Exclude_Indicator	A character string that identifies the contained SUBSTANCE-FAMILY as either within (include) or outside (exclude) of the containing SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-MEMBERSHIP	Substance_Family_Substance_Family_Membership_Rationale_Text	An explanation of the reason(s) for including or excluding the subordinate SUBSTANCE-FAMILY as a member of the superior SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-MEMBERSHIP	Substance_Family_Substance_Family_Membership_Start_Date	The first effective calendar of the SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-MEMBERSHIP.
SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-MEMBERSHIP	Substance_Family_Substancel_Family_Membership_Stop_Date	The last effective calendar of the SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-MEMBERSHIP.
SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-	Substance_Family_Substance_Family_Membership_Larger_Family_Identifier	A designator of the more encompassing SUBSTANCE-FAMILY.

Entity Name	Attribute Name	Attribute Description
MEMBERSHIP		
SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-MEMBERSHIP	Substance_Family_Substance_Family_Membership_Smaller_Family_Identifier	A designator of the subordinate SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Substance_Family_Identifier	A designator of exactly one SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Substance_Family_Substance_Membership_Include_Exclude_Indicator	A character string that identifies the subordinate SUBSTANCE as either within (include) or outside (exclude) of the superior SUBSTANCE-FAMILY.
SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Substance_Family_Substance_Membership_Rationale_Text	An explanation of the reason(s) for including or excluding the SUBSTANCE as a member of the SUBSTANCE-FAMILY. For example, it might describe the analytical technique used to make the determination that a SUBSTANCE belonged to the family of Volatile Organic Compounds. Or it might explain that this substance is one of a group of chemicals that a military component determined to need tracking for air emissions.
SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Substance_Family_Substance_Membership_Start_Date	The first effective calendar of the SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP.
SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Substance_Family_Substance_Membership_Stop_Date	The last effective calendar of the SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP.
SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-FIRST-AID-MEASURE-DETERMINATION	First_Aid_Measure_Identifier	A designator of exactly one FIRST-AID-MEASURE.
SUBSTANCE-FIRST-AID-MEASURE-DETERMINATION	Substance_First_Aid_Measure_Determination_Distinguishing_Identifier	A discriminator that designates one exact SUBSTANCE-FIRST-AID-MEASURE-DETERMINATION among all others for the same SUBSTANCE-FIRST-AID-MEASURE.
SUBSTANCE-FIRST-AID-MEASURE-	Substance_First_Aid_Measure_Determination_Start_Date	The first effective calendar day of the SUBSTANCE-FIRST-AID-MEASURE-DETERMINATION.

Entity Name	Attribute Name	Attribute Description
DETERMINATION		
SUBSTANCE-FIRST-AID-MEASURE-DETERMINATION	Substance_First_Aid_Measure_Determination_Stop_Date	The last effective calendar day of the SUBSTANCE-FIRST-AID-MEASURE-DETERMINATION.
SUBSTANCE-FIRST-AID-MEASURE-DETERMINATION	Substance_First_Aid_Measure_Determination_Organization_Identifier	A designator of the ORGANIZATION that drew the conclusion(s) involved in the SUBSTANCE-FIRST-AID-MEASURE-DETERMINATION.
SUBSTANCE-FIRST-AID-MEASURE-DETERMINATION	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-HAZARD	Hazard_Identifier	The designator of exactly one Hazard.
SUBSTANCE-HAZARD	Substance_Hazard_Details_Text	A thorough explanation of the SUBSTANCE-HAZARD.
SUBSTANCE-HAZARD	Substance_Hazard_Name	A commonly understood term for the SUBSTANCE-HAZARD.
SUBSTANCE-HAZARD	Substance_Hazard_Primary_Danger_Indicator	A character string that identifies the SUBSTANCE-HAZARD as the most significant danger posed by direct or indirect contact with the relevant SUBSTANCE or its SUBSTANCE-REACTIONs.
SUBSTANCE-HAZARD	Substance_Hazard_Summary_Text	A brief explanation of the SUBSTANCE-HAZARD.
SUBSTANCE-HAZARD	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-HAZARD-DETERMINATION	Hazard_Identifier	The designator of exactly one Hazard.
SUBSTANCE-HAZARD-DETERMINATION	Substance_Hazard_Deterrmination_Distinguishing_Identifier	The designator of exactly one SUBSTANCE-HAZARD-DETERMINATION among all others for the same SUBSTANCE-HAZARD.
SUBSTANCE-HAZARD-DETERMINATION	Substance_Hazard_Deterrmination_Start_Date	The first effective calendar day of the SUBSTANCE-HAZARD-DETERMINATION.
SUBSTANCE-HAZARD-DETERMINATION	Substance_Hazard_Deterrmination_Stop_Date	The last effective calendar day of the SUBSTANCE-HAZARD-DETERMINATION.
SUBSTANCE-HAZARD-DETERMINATION	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-HAZARD-DETERMINATION	Substance_Exposure_Hazard_Determination_Organization_Identifier	A designator of the ORGANIZATION that drew the conclusion(s) involved in the SUBSTANCE-HAZARD-DETERMINATION.

Entity Name	Attribute Name	Attribute Description
SUBSTANCE-IN-SOLUTION	Substance_In_Solution_Solute_Identifier	A designator of the SUBSTANCE that is dissolved within the solvent LIQUID.
SUBSTANCE-IN-SOLUTION	Substance_In_Solution_Solvent_Identifier	A designator of the LIQUID within which the solute SUBSTANCE is dissolved.
SUBSTANCE-INCOMPATIBILE-SUBSTANCE	Substance_Incompatible_Substance_First_Substance_Identifier	A designator of the SUBSTANCE that was arbitrarily chosen to be superior in the set of two substances within the SUBSTANCE-INCOMPATABILITY-SUBSTANCE.
SUBSTANCE-INCOMPATIBILE-SUBSTANCE	Substance_Incompatible_Substance_Second_Substance_Identifier	A designator of the SUBSTANCE that was arbitrarily chosen to be subordinate in the set of two substances within the SUBSTANCE-INCOMPATABILITY-SUBSTANCE.
SUBSTANCE-INCOMPATIBILE-SUBSTANCE	Substance_Incompatible_Substance_Possible_Result_Summary_Text	A brief explanation of the situation(s) that might cause the potentially hazardous effects of combining the relevant SUBSTANCES and of the hazardous effects, themselves.
SUBSTANCE-INCOMPATIBILE-SUBSTANCE	Substance_Incompatible_Substance_Possible_Result_Details_Text	A thorough explanation of the situation(s) that might cause the potentially hazardous effects of combining the relevant SUBSTANCES and of the hazardous effects, themselves.
SUBSTANCE-INCOMPATIBLE-SUBSTANCE-FAMILY	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-INCOMPATIBLE-SUBSTANCE-FAMILY	Substance_Family_Identifier	A designator of exactly one SUBSTANCE-FAMILY.
SUBSTANCE-INCOMPATIBLE-SUBSTANCE-FAMILY	Substance_Incompatible_Substance_Family_Possible_Result_Details_Text	A thorough explanation of the situation(s) that might cause the potentially hazardous effects of combining the relevant SUBSTANCE with another SUBSTANCE within the relevant SUBSTANCE-FAMILY and of the hazardous effects, themselves.
SUBSTANCE-INCOMPATIBLE-SUBSTANCE-FAMILY	Substance_Incompatible_Substance_Family_Possible_Result_Summary_Text	A brief explanation of the situation(s) that might cause the potentially hazardous effects of combining the relevant SUBSTANCE with another SUBSTANCE within the relevant SUBSTANCE-FAMILY and of the hazardous effects, themselves.
SUBSTANCE-MATCHING-SYNONYM	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-MATCHING-SYNONYM	Substance_Synonym_Identifier	A designator of exactly one SUBSTANCE-SYNONYM.
SUBSTANCE-MATCHING-SYNONYM	Substance_Matching_Synonym_Usage_Type_Name	A commonly understood term for the way that the relevant SUBSTANCE-MATCHING-SYNONYM functions. Examples are values that distinguish among the following usage types: Common or Generic, Trade or Trademark, Scientific Name, Chemical Formula, and Scientific Symbol.

Entity Name	Attribute Name	Attribute Description
SUBSTANCE-MATCHING-SYNONYM	Substance_Matching_Synonym_Stop_Date	The last calendar day that the SUBSTANCE-MATCHING-SYNONYM is effective.
SUBSTANCE-MATCHING-SYNONYM	Substance_Matching_Synonym_Start_Date	The first calendar day that the SUBSTANCE-MATCHING-SYNONYM is effective.
SUBSTANCE-NOTE-TO-PHYSICIAN	Note_To_Physician_Identifier	A designator of exactly one NOTE-TO-PHYSICIAN.
SUBSTANCE-NOTE-TO-PHYSICIAN	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-NOTE-TO-PHYSICIAN-DETERMINATION	Note_To_Physician_Identifier	A designator of exactly one NOTE-TO-PHYSICIAN.
SUBSTANCE-NOTE-TO-PHYSICIAN-DETERMINATION	Substance_Note_To_Physican_Determination_Distinguishing_Identifier	A discriminator that designates one exact SUBSTANCE-NOTE-TO-PHYSICIAN-DETERMINATION among all others for the same SUBSTANCE-NOTE-TO-PHYSICIAN.
SUBSTANCE-NOTE-TO-PHYSICIAN-DETERMINATION	Substance_Note_To_Physican_Determination_Start_Date	The first effective calendar day of the SUBSTANCE-NOTE-TO-PHYSICIAN-DETERMINATION.
SUBSTANCE-NOTE-TO-PHYSICIAN-DETERMINATION	Substance_Note_To_Physican_Determination_Stop_Date	The last effective calendar day of the SUBSTANCE-NOTE-TO-PHYSICIAN-DETERMINATION.
SUBSTANCE-NOTE-TO-PHYSICIAN-DETERMINATION	Substance_Note_To_Physician_Determination_Organization_Identifier	A designator of the ORGANIZATION that drew the conclusion(s) involved in the SUBSTANCE-NOTE-TO-PHYSICIAN-DETERMINATION.
SUBSTANCE-NOTE-TO-PHYSICIAN-DETERMINATION	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Specific_Gravity_Quantity	The relative density of the SUBSTANCE-PHYSICAL-STATE. For a solid or a liquid, the specific gravity is the ratio of the density of the substance to the density of pure water at 4 degrees Celsius. For a gas, the specific gravity is the ratio of the density of the gaseous SUBSTANCE to the density of dry air at standard temperature and pressure.
SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Type_Name	A commonly used term for the kind of basic observable structure of the relevant SUBSTANCE at standard temperature and pressure. That is, whether the structure is that of a gas, liquid, solid, plasma, or a slurry (a combination of solid and liquid)..
SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Original_Substance_Identifier	A designator of the relevant SUBSTANCE that exists in the form of the SUBSTANCE-PHYSICAL-STATE. For example, the solid Dry Ice is a SUBSTANCE-PHYSICAL-STATE of the SUBSTANCE

Entity Name	Attribute Name	Attribute Description
		Carbon Dioxide.
SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Identifier	A designator of exactly one SUBSTANCE-PHYSICAL-STATE.
SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Nominal_Pressure_Quantity	The magnitude of the force per unit area of the SUBSTANCE when it exists in the SUBSTANCE-PHYSICAL-STATE and with the characteristics identified for the SUBSTANCE-PHYSICAL-STATE. The default value for this attribute is standard pressure. Note that this is a typical pressure. It is not a pressure threshold for when a SUBSTANCE will enter or leave this state.
SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Nominal_Temperature	The internal heat of the SUBSTANCE when it exists in the SUBSTANCE-PHYSICAL-STATE and with the characteristics identified for the SUBSTANCE-PHYSICAL-STATE. The default value for this attribute is standard temperature. Note that this is a typical temperature, not a temperature threshold for when a SUBSTANCE will enter or leave this state.
SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Nominal_Pressure_Unit_Of_Measure_Identifier	A designator of the scale of the magnitude of the force per unit area as quantified by the Substance_Physical_State_Nominal_Pressure_Quantity for example, psi (pounds per square inch) atm (atmospheres), bar, torr, and pascal.
SUBSTANCE-PHYSICAL-STATE	Substance_Physical_State_Nominal_Temperature_Unit_Of_Measure_Identifier	A designator of the scale of the magnitude of the heat as quantified by the Substance_Physical_State_Nominal_Temperature for example, for Degrees Centigrade, Degrees Fahrenheit, Degrees Kelvin, or Degrees Celsius.
SUBSTANCE-REACTION	Substance_Reaction_Type_Name	A commonly-understood term for the REACTION-TYPE. It is a categorization applicable to SUBSTANCE-REACTIONs according to the relative difference in size between the largest molecules involved before the SUBSTANCE-REACTION and those involved after the SUBSTANCE REACTION. Examples are decomposition (smaller after the reaction)and condensation (larger after the reaction).
SUBSTANCE-REACTION	Substance_Reaction_Distinguishing_Identifier	A discriminator that designates one SUBSTANCE-REACTION among all others for the same original SUBSTANCE.
SUBSTANCE-REACTION	Substance_Reaction_Details_Text	A thorough explanation of the SUBSTANCE-REACTION.
SUBSTANCE-REACTION	Substance_Reaction_Name	A commonly understood term for the SUBSTANCE-REACTION.
SUBSTANCE-REACTION	Substance_Reaction_Summary_Text	A brief explanation of the SUBSTANCE-REACTION.
SUBSTANCE-REACTION	Substance_Identifier	A designator of exactly one SUBSTANCE.

Entity Name	Attribute Name	Attribute Description
SUBSTANCE-REACTION-EFFECT	Reaction_Effect_Identifier	A designator of exactly one REACTION-EFFECT.
SUBSTANCE-REACTION-EFFECT	Substance_Reaction_Distinguishing_Identifier	A discriminator that designates one SUBSTANCE-REACTION among all others for the same original SUBSTANCE.
SUBSTANCE-REACTION-EFFECT	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-REACTION-HAZARD	Hazard_Identifier	The designator of exactly one Hazard.
SUBSTANCE-REACTION-HAZARD	Substance_Reaction_Distinguishing_Identifier	A discriminator that designates one SUBSTANCE-REACTION among all others for the same original SUBSTANCE.
SUBSTANCE-REACTION-HAZARD	Substance_Reaction_Hazard_Details_Text	A thorough explanation of the SUBSTANCE-REACTION-HAZARD.
SUBSTANCE-REACTION-HAZARD	Substance_Reaction_Hazard_Name	A commonly understood term for the SUBSTANCE-REACTION-HAZARD.
SUBSTANCE-REACTION-HAZARD	Substance_Reaction_Hazard_Primary_Danger_Indicator	A character string that identifies the SUBSTANCE-REACTION-HAZARD as the most significant danger posed by direct or indirect contact with the relevant SUBSTANCE or its SUBSTANCE-REACTIONs.
SUBSTANCE-REACTION-HAZARD	Substance_Reaction_Hazard_Summary_Text	A brief explanation of the SUBSTANCE-REACTION-HAZARD.
SUBSTANCE-REACTION-HAZARD	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-REACTION-PRECONDITION	Condition_To_Avoid_Identifier	A designator of exactly one CONDITION-TO-AVOID.
SUBSTANCE-REACTION-PRECONDITION	Substance_Reaction_Distinguishing_Identifier	A discriminator that designates one SUBSTANCE-REACTION among all others for the same original SUBSTANCE.
SUBSTANCE-REACTION-PRECONDITION	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-REACTION-RESULTING-SUBSTANCE	Substance_Reaction_Resulting_Substance_Identifier	A designator of the SUBSTANCE created by the SUBSTANCE-REACTION.
SUBSTANCE-REACTION-RESULTING-SUBSTANCE	Substance_Reaction_Resulting_Substance_Original_Substance_Identifier	A designator of the SUBSTANCE that undergoes the relevant SUBSTANCE-REACTION.
SUBSTANCE-REACTION-	Substance_Reaction_Distinguishing_Identifier	A discriminator that designates one SUBSTANCE-REACTION among all others for the same original SUBSTANCE.

Entity Name	Attribute Name	Attribute Description
RESULTING-SUBSTANCE		
SUBSTANCE-REGULATION-REQUIREMENT	Substance_Regulation_Requirement_Start_Date	The first calendar day of the SUBSTANCE-REGULATION-REQUIREMENT.
SUBSTANCE-REGULATION-REQUIREMENT	Substance_Regulation_Requirement_Stop_Date	The last calendar day of the SUBSTANCE-REGULATION-REQUIREMENT.
SUBSTANCE-REGULATION-REQUIREMENT	Regulation_Identifier	A designator of exactly one REGULATION.
SUBSTANCE-REGULATION-REQUIREMENT	Regulation_Requirement_Start_Date	The first calendar day of the REGULATION-REQUIREMENT.
SUBSTANCE-REGULATION-REQUIREMENT	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-REGULATION-REQUIREMENT	Substance_Regulation_Requirement_Reporting_Code	A character string that stands for the relevant SUBSTANCE, as covered by the relevant REGULATION-REQUIREMENT, when documenting the SUBSTANCE under the REGULATION-REQUIREMENT.
SUBSTANCE-ROUTE-OF-EXPOSURE	Route_Of_Exposure_Name	A commonly used term for the ROUTE-OF-EXPOSURE. Known values are Eye Contact, Skin Contact, Inhalation, and Ingestion.
SUBSTANCE-ROUTE-OF-EXPOSURE	Substance_Route_Of_Exposure_Details_Text	A thorough explanation of the SUBSTANCE-ROUTE-OF-EXPOSURE.
SUBSTANCE-ROUTE-OF-EXPOSURE	Substance_Route_Of_Exposure_Summary_Text	A brief explanation of the SUBSTANCE-ROUTE-OF-EXPOSURE.
SUBSTANCE-ROUTE-OF-EXPOSURE	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT	Adverse_Health_Effect_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT.
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT	Route_Of_Exposure_Name	A commonly used term for the ROUTE-OF-EXPOSURE. Known values are Eye Contact, Skin Contact, Inhalation, and Ingestion.
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT	Target_Body_Part_Name	A commonly-used term for the BODY-PART likely to be affected. For example, Liver, Kidney, Skin, Lung, and Central Nervous System.

Entity Name	Attribute Name	Attribute Description
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Adverse_Health_Effect_Identifier	A designator of exactly one ADVERSE-HEALTH-EFFECT.
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Substance_Route_Of_Exposure_Adverse_Healtlh_Effect_Determination_Distinguish_Id	A discriminator that designates one exact ADVERSE-HEALTH-EFFECT-ROUTE-OF-EXPOSURE-DETERMINATION among all others for the same ADVERSE-HEALTH-EFFECT and ROUTE-OF-EXPOSURE.
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Route_Of_Exposure_Name	A commonly used term for the ROUTE-OF-EXPOSURE. Known values are Eye Contact, Skin Contact, Inhalation, and Ingestion.
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Target_Body_Part_Name	A commonly-used term for the BODY-PART likely to be affected. For example, Liver, Kidney, Skin, Lung, and Central Nervous System.
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Substance_Route_Of_Exposure_Adverse_Healtlh_Effect_Determination_Start_Date	The first effective calendar day of the ADVERSE-HEALTH-EFFECT-ROUTE-OF-EXPOSURE-DETERMINATION.
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Substance_Route_Of_Exposure_Adverse_Healtlh_Effect_Determination_Stop_Date	The last effective calendar day of the ADVERSE-HEALTH-EFFECT-ROUTE-OF-EXPOSURE-DETERMINATION.
SUBSTANCE-ROUTE-OF-EXPOSURE-ADVERSE-HEALTH-EFFECT-DETERMINATION	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-ROUTE-OF-EXPOSURE-	Substance_Route_Of_Exposure_Adverse_Healtlh_Effect_Determination_Organization_Id	A designator of the ORGANIZATION that drew the conclusion(s) involved in the SUBSTANCE-ROUTE-OF-EXPOSURE-

Entity Name	Attribute Name	Attribute Description
ADVERSE-HEALTH-EFFECT-DETERMINATION		ADVERSE-HEALTH-EFFECT-DETERMINATION.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT	Personal_Protective_Equipment_Identifier	A designator of exactly one piece of PERSONAL-PROTECTIVE-EQUIPMENT.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT	Route_Of_Exposure_Name	A commonly used term for the ROUTE-OF-EXPOSURE. Known values are Eye Contact, Skin Contact, Inhalation, and Ingestion.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT	Substance_Route_Of_Exposure_Personal_Protective_Equipment_Details_Text	A thorough explanation of the SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT	Substance_Route_Of_Exposure_Personal_Protective_Equipment_Summary_Text	A brief explanation of the SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION	Substance_Route_Of_Exposure_Personal_Protective_Equipment_Dtrmntn_Dstngshng_Id	A discriminator that designates one SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION among all others for the same SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION	Substance_Route_Of_Exposure_Personal_Protective_Equipment_Dtrmnt_Organization_Id	A designator of the ORGANIZATION that drew the conclusion(s) involved in the SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION.
SUBSTANCE-ROUTE-	Substance_Route_Of_Exposure_Personal_Protective_Equipment_Dtrmntn_	The first effective calendar day of the SUBSTANCE-ROUTE-OF-

Entity Name	Attribute Name	Attribute Description
OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION	Start_Date	EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION	Substance_Route_Of_Exposure_Personal_Protective_Equipment_Dtrmntn_Stop_Date	The last effective calendar day of the SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION	Route_Of_Exposure_Name	A commonly used term for the ROUTE-OF-EXPOSURE. Known values are Eye Contact, Skin Contact, Inhalation, and Ingestion.
SUBSTANCE-ROUTE-OF-EXPOSURE-PERSONAL-PROTECTIVE-EQUIPMENT-DETERMINATION	Personal_Protective_Equipment_Identifier	A designator of exactly one piece of PERSONAL-PROTECTIVE-EQUIPMENT.
SUBSTANCE-SIGN-SYMPTOM	Sign_Symptom_Identifier	A designator of exactly one SIGN-SYMPTOM.
SUBSTANCE-SIGN-SYMPTOM	Substance_Sign_Symptom_Details_Text	A thorough explanation of the SUBSTANCE-SIGN-SYMPTOM.
SUBSTANCE-SIGN-SYMPTOM	Substance_Sign_Symptom_Name	A commonly understood term for the SUBSTANCE-SIGN-SYMPTOM.
SUBSTANCE-SIGN-SYMPTOM	Substance_Sign_Symptom_Summary_Text	A brief explanation of the SUBSTANCE-SIGN-SYMPTOM.
SUBSTANCE-SIGN-SYMPTOM	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-SIGN-SYMPTOM-	Sign_Symptom_Identifier	A designator of exactly one SIGN-SYMPTOM.

Entity Name	Attribute Name	Attribute Description
DETERMINATION		
SUBSTANCE-SIGN-SYMPTOM-DETERMINATION	Substance_Sign_Symptom_Determination_Distinguishing_Identifier	A discriminator that designs of one SUBSTANCE-SIGN-SYMPTOM-DETERMINATION among all others for the same SUBSTANCE-SIGN-SYMPTOM.
SUBSTANCE-SIGN-SYMPTOM-DETERMINATION	Substance_Sign_Symptom_Determination_Start_Date	The first effective calendar day of the SUBSTANCE-SIGN-SYMPTOM-DETERMINATION.
SUBSTANCE-SIGN-SYMPTOM-DETERMINATION	Substance_Sign_Symptom_Determination_Stop_Date	The last effective calendar day of the SUBSTANCE-SIGN-SYMPTOM-DETERMINATION.
SUBSTANCE-SIGN-SYMPTOM-DETERMINATION	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-SIGN-SYMPTOM-DETERMINATION	Substance_Sign_Symptom_Determination_Organization_Identifier	A designator of the ORGANIZATION that drew the conclusion(s) involved in the SUBSTANCE-SIGN-SYMPTOM-DETERMINATION.
SUBSTANCE-SIGNAL-WORD	Signal_Word_Name	The text of the SIGNAL-WORD.
SUBSTANCE-SIGNAL-WORD	Substance_Signal_Word_Start_Date	The first effective calendar day of the SUBSTANCE-SIGNAL-WORD.
SUBSTANCE-SIGNAL-WORD	Substance_Signal_Word_Stop_Date	The last calendar day of the SUBSTANCE-SIGNAL-WORD's effectiveness.
SUBSTANCE-SIGNAL-WORD	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-SIGNAL-WORD-DETERMINATION	Signal_Word_Name	The text of the SIGNAL-WORD.
SUBSTANCE-SIGNAL-WORD-DETERMINATION	Substance_Signal_Word_Determination_Distinguishing_Identifier	A discriminator that distinguishes the SIGNAL-WORD from all others for the same SUBSTANCE.
SUBSTANCE-SIGNAL-WORD-DETERMINATION	Substance_Signal_Word_Determination_Start_Date	The first calendar day of effectiveness of the SUBSTANCE-SIGNAL-WORD-DETERMINATION.
SUBSTANCE-SIGNAL-WORD-DETERMINATION	Substance_Signal_Word_Determination_Stop_Date	The last calendar day of effectiveness of the SUBSTANCE-SIGNAL-WORD-DETERMINATION.
SUBSTANCE-SIGNAL-WORD-DETERMINATION	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-SIGNAL-WORD-	Substance_Signal_Word_Determination_Organization_Identifier	A designator of the ORGANIZATION that drew the conclusion(s) involved in the SUBSTANCE-SIGNAL-WORD-

Entity Name	Attribute Name	Attribute Description
DETERMINATION		DETERMINATION.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Gas_Pressure_Unit_Of_Measure_Identifier	A designator of the scale of the magnitude of the force per unit area as quantified by the Substance_Solubility_Determination_Gas_Pressure_Quantity. Examples of the units are psi (pounds per square inch), atm (atmospheres), bar, torr, and pascal.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Solid_Solute_Solubility_Unit_Of_Measure_Id	A designator of the scale of the magnitude of the quantity of material as quantified by the Substance_Solubility_Determination_Solid_Solubility_Quantity. An example of a unit is Grams per liter.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Temperature_Unit_Of_Measure_Identifier	A designator of the scale of the magnitude of the heat as quantified by the Substance_Solubility_Determination_Temperature_Quantity for example, for Degrees Centigrade, Degrees Fahrenheit, Degrees Kelvin, or Degrees Celsius.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_In_Solution_Solute_Identifier	A designator of the SUBSTANCE that is dissolved within the solvent LIQUID.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_In_Solution_Solvent_Identifier	A designator of the LIQUID within which the SUBSTANCE is dissolved.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Distinguishing_Identifier	A designator that identifies one SUBSTANCE-SOLUBILTY-DETERMINATION among all others for the same SUBSTANCE-IN-SOLUTION.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Descriptive_Value_Name	A commonly understood term that qualitatively denotes the extent to which the solute is soluble in the relevant solvent. Examples: slightly soluble; insoluble; very soluble.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Gas_Pressure_Quantity	The force per unit of area of the solute, if it was a gas, when the SUBSTANCE-SOLUBILITY-DETERMINATION was made.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Gas_Solubility_Quantity	The ratio of the concentration of solute SUBSTANCE, when in a gaseous state above a solvent, to the concentration of the gaseous solute that will dissolve in the solvent SUBSTANCE, as established by the SUBSTANCE-SOLUBILITY-DETERMINATION.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Solid_Solubility_Quantity	The mass of solute SUBSTANCE, when in the solid state, that will dissolve in a unit volume of the solvent SUBSTANCE, as established by the SUBSTANCE-SOLUBILITY-DETERMINATION.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Start_Date	The first calendar day of effectiveness of the SUBSTANCE-SOLUBILITY-DETERMINATION.
SUBSTANCE-	Substance_Solubility_Determination_Stop_Date	The last calendar day of effectiveness of the SUBSTANCE-

Entity Name	Attribute Name	Attribute Description
SOLUBILITY-DETERMINATION		SOLUBILITY-DETERMINATION.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Temperature_Quantity	The heat of the solute and the solution, which must have been identical, for which the SUBSTANCE-SOLUBILITY-DETERMINATION was made.
SUBSTANCE-SOLUBILITY-DETERMINATION	Substance_Solubility_Determination_Organization_Identifier	A designator of the ORGANIZATION that made the SUBSTANCE-SOLUBILITY-DETERMINATION.
SUBSTANCE-SYNONYM	Substance_Synonym_Text	A name or other character string that comprises the SUBSTANCE-SYNONYM.
SUBSTANCE-SYNONYM	Substance_Synonym_Identifier	A designator of exactly one SUBSTANCE-SYNONYM.
SUBSTANCE-SYNONYM	Substance_Synonym_Promulgation_Type_Name	A commonly understood term for the kind of authority that established SUBSTANCE-SYNONYM for example, either an ORGANIZATION, a REGULATION, a law, or other (such as historical usage).
SUBSTANCE-SYNONYM	Substance_Synonym_Image	The visual expression of the SUBSTANCE-SYNONYM when not be expressed in ordinary typescript.
SUBSTANCE-SYNONYM	Substance_Synonym_Structure_Type_Name	A commonly understood term for the compositional nature of the SUBSTANCE-SYNONYM. Known options are: Full Name, Short Name, Acronym, Symbol, and Abbreviation.
SUBSTANCE-TRADE-SECRET	Substance_Trade_Secret_Confidential_Substance_Inventory_Number	A character string that designates the exact relevant proprietary SUBSTANCE as provided by the ORGANIZATION registering the relevant TRADE-SECRET.
SUBSTANCE-TRADE-SECRET	Substance_Trade_Secret_Substance_Generic_Description_Text	An explanation of the nature of the relevant proprietary SUBSTANCE that does not reveal the aspects that make information about it proprietary as recorded in the relevant TRADE-SECRET.
SUBSTANCE-TRADE-SECRET	Trade_Secret_Administration_Organization_Identifier	The designator of the organization that dispenses the TRADE-SECRET.
SUBSTANCE-TRADE-SECRET	Trade_Secret_Number	A character string that designates exactly one TRADE-SECRET among all others that are recorded with the ORGANIZATION that administers the TRADE-SECRET.
SUBSTANCE-TRADE-SECRET	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-TRADE-SECRET-SUBSTANCE-NAME	Trade_Secret_Administration_Organization_Identifier	The designator of the exact organization that dispenses the TRADE-SECRET.
SUBSTANCE-TRADE-SECRET-SUBSTANCE-NAME	Trade_Secret_Number	A character string that designates exactly one TRADE-SECRET among all others that are recorded with the ORGANIZATION that administers the TRADE-SECRET.

Entity Name	Attribute Name	Attribute Description
SUBSTANCE-TRADE-SECRET-SUBSTANCE-NAME	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-TRADE-SECRET-SUBSTANCE-NAME	Substance_Synonym_Identifier	A designator of exactly one SUBSTANCE-SYNONYM.
SUBSTANCE-VAPOR-PRESSURE	Substance_Vapor_Pressure_Temperature_Unit_Of_Measure_Identifier	A designator of the scale used for the magnitude of the internal heat of the SUBSTANCE for which the SUBSTANCE-VAPOR-PRESSURE was determined. Examples of suitable units are Degrees Celsius and Degrees Fahrenheit.
SUBSTANCE-VAPOR-PRESSURE	Substance_Vapor_Pressure_Distinguishing_Identifier	A character string that designates one SUBSTANCE-VAPOR-PRESSURE among all others for the same SUBSTANCE.
SUBSTANCE-VAPOR-PRESSURE	Substance_Vapor_Pressure_Quantity	The force per unit of area determined to be the SUBSTANCE-VAPOR-PRESSURE.
SUBSTANCE-VAPOR-PRESSURE	Substance_Vapor_Pressure_Temperature	The internal heat of the relevant SUBSTANCE for which the SUBSTANCE-VAPOR-PRESSURE was determined.
SUBSTANCE-VAPOR-PRESSURE	Substance_Identifier	A designator of exactly one SUBSTANCE.
SUBSTANCE-VAPOR-PRESSURE	Substance_Vapor_Pressure_Unit_Of_Measure_Identifier	A designator of the scale used for the magnitude of the MATERIAL-TEMPERATURE-THRESHOLD for example, for Degrees Centigrade, Degrees Fahrenheit, Degrees Kelvin, or Degrees Celsius.
SUBSTANCE-VAPOR-PRESSURE	Substance_Vapor_Pressure_Specific_Gravity_Quantity	The relative density of the SUBSTANCE'S vapor when the SUBSTANCE is held at the temperature and pressure specified for the SUBSTANCE-VAPOR-PRESSURE. The specific gravity is the ratio of the density of the gaseous SUBSTANCE to the density of dry air at standard temperature and pressure.
SUSTANCE-STABILIZATION	Stabilizing_Group_Identifier	A designator of exactly one STABILIZING-GROUP.
SUSTANCE-STABILIZATION	Substance_Reaction_Distinguishing_Identifier	A discriminator that designates one SUBSTANCE-REACTION among all others for the same original SUBSTANCE.
SUSTANCE-STABILIZATION	Substance_Stabilization_Details_Text	A through explanation of the SUBSTANCE STABILIZATION. For example, Acrylonitrile is unstable and undergoes thermal decomposition unless it is stabilized with anhydrous ammonia prior to storage or transfer.
SUSTANCE-STABILIZATION	Substance_Stabilization_Summary_Text	A brief explanation of the SUBSTANCE STABILIZATION. For example, To avoid thermal decomposition, stabilize with anhydrous ammonia.
SUSTANCE-STABILIZATION	Substance_Identifier	A designator of exactly one SUBSTANCE.
TRADE-SECRET	Trade_Secret_Number	A character string that designates exactly one TRADE-SECRET

Entity Name	Attribute Name	Attribute Description
		among all others that are recorded with the ORGANIZATION that administers the TRADE-SECRET.
TRADE-SECRET	Trade_Secret_Start_Date	The first effective calendar day of the TRADE-SECRET.
TRADE-SECRET	Trade_Secret_Stop_Date	The last effective calendar day of the TRADE-SECRET.
TRADE-SECRET	Trade_Secret_Registering_Organization_Identifier	A designator of the ORGANIZATION that requested the TRADE-SECRET.
TRADE-SECRET	Trade_Secret_Administration_Organization_Identifier	The designator of the organization that dispenses the TRADE-SECRET.
UNIT-OF-MEASURE	Unit_Of_Measure_Name	The term commonly used to refer to the Unit of Measure. Used with Unit of Measure Code..
UNIT-OF-MEASURE	Unit_Of_Measure_Description_Text	A statement providing details about the UNIT-OF-MEASURE.
UNIT-OF-MEASURE	Unit_Of_Measure_Code	The code that represents the units in which a value is being expressed, or manner in which a measurement has been taken.
UNIT-OF-MEASURE	Unit_Of_Measure_Identifier	A designator of exactly one UNIT-OF-MEASURE.

Appendix E: Hazardous Process Authorization (HPA) Logical Data Model

A process authorization begins when a shop tasked to perform work defines the need for a hazardous substance and submits the process authorization request. The request undergoes collaborative review in consultation with the process owner by individuals with expertise in specific environment, safety, and health areas. For example, the environment review will identify requirements that limit wastes and releases, mandate reporting for on-site chemical quantities, and control the disposal of byproducts. Similarly, occupational health experts will evaluate the request for applicable worker exposure limits and requirements for personal protective equipment. The result of the review may be an authorization of the shop's use of the hazardous substance subject to specific operating limitations, training requirements, or other controls designed to mitigate the hazards.

Process Authorization Link to the Business Enterprise Architecture (BEA)

Process authorization links into several BEA components to obtain corporate data such as Training and Skills of Personnel, Acquisition Element Type, Material Catalog Item, Material Assets (Equipment, Property and Material), and Location.

Process Authorization Link to Product Hazard Data

Process authorization links into several components of the Product Hazard Data (PHD) to obtain corporate data such as Product and Materiel Catalog Item Product Period.

The process authorization data requirement is the information required by DoD's ESOH functional community to make a decision on the procurement, issuance, and control of hazardous materials used in processes (units of work) performed by the DoD. Subject matter experts from DoD Components and within the ESOH functional community, as well as strong representation from the logistics community, collaboratively identified and defined the requirements to target sustainability and for hazards materials management from concept to disposal.

Definitions related to the process authorization include:

Process – A kind of activity at the lowest identifiable level (unit of work providing a product or service) that has an ESOH requirement(s).

Process Authorization – The process authorization is the formal permission (or denial of permission) to conduct an operational process (unit of work) under a specified set of terms and conditions. The process authorization output is the set of controls on an operational process work that pertain to people, process, equipment, location, materiel, and other factors that combine to execute the unit of work.

Process Execution -- A specific instance of a process performed at some specific time.

The process authorization logical data model consists of entities and entity descriptions; attributes and attribute descriptions; and the relationships between

entities. The entity relationship depictions are in accordance with the DoD Architecture Framework (DoDAF) IDEF1X notation.

This document displays the logical data model in three views to parallel the business process that defines the work, authorizes the work process, and uses the data during work process execution.

Details for each of the three views are in the Tabs A, B, and C within this appendix. Each Tab contains a summary of the view and the diagram. A table containing the logical data model entities and entity descriptions is Tab D. Finally, a table containing the logical data model attributes and attribute descriptions is Tab E.

The color code corresponding to the business enterprise architecture (BEA) business enterprise priorities (BEPs) are in Tab A of Appendix F: Hazardous Material Logical Data Model Integration Points. Within the data model views, these colors highlight those entities belonging to one of the BEA BEPs:

TAB A: Process Definition View

The process definition view establishes a framework for a unit of work (process) and provides a high-level category for a Process. It takes into consideration the process and its associated default parameters such as the controls, equipment, material, skills, permits types, etc. It looks at the type of documentation and training requirements needed to perform a process. The process definition view also looks at risk assessments or hazards associated with a process, the owner, and status of a process. The process definition could possibly take physical location, shop, or person performing a process into consideration, but does not require or depend on this type for information for this view.

The process definition view exemplifies data required to answer the following questions.

What is the process?

Process execution requires what material, equipment, skills, permits, and controls?

On what property or kind of property is the process being performed?

What by-product does the process generate?

What are the necessary worker-applied medical controls for the process?

What are the impacts and aspects associated with the process?

What regulations govern a process?

What are the risks and hazards assessments for the process?

Who is responsible for the process?

What is the status of the process?

Figure 10: HPA Logical Data Model View – Process Definition

Graphics placeholder – please see companion files for model view graphics.

TAB B: Process Authorization View

This view establishes the data required for evaluation during process authorization. It shows the types of information needed by the ESOH community to authorize the process including the material, equipment, controls, skills, permits, by-product, disposition considerations, aspects (with consideration of the associated impacts), and the kind of object a process will be performed on. It allows an ESOH evaluator to track the status of a process authorization and the people responsible for the authorization. It addresses identifies the shop that owns an authorized process along with the shops associated work shift, people, and organization.

The process authorization view exemplifies data required to answer the following questions.

What is a process authorization?

What process is authorized?

Who is the owner of the process authorization?

What is the status of the process authorization?

Who will maintain the status of the process authorization?

What are the approved materials for use in a process by a process authorization?

What is the order for like materials approved for use in a process by a process authorization?

What is the required equipment approved for a process by a process authorization?

What process does a process authorization allow to be performed on a property or kind of property?

What are the anticipated by-products for the authorized process?

What disposition considerations are required by the process authorization?

What permits are approved or allowed by a process authorization?

What controls are required or mandated by a process authorization?

What aspects and impacts are important to the process authorization?

What work location is authorized by a process authorization?

What inspection criteria are specified by a process authorization?

What medical controls are required for a process authorization?

What are the certifications of the organizations performing the process to be authorized?

Figure 11: HPA Logical Data Model View – Process Authorization

Graphics placeholder – please see companion files for model view graphics.

TAB C: Process Execution View

This view establishes the data collection on the specific occurrence of a process. This view contains important information about work such as; actual material quantity, equipment used, controls applied, as well as information about the people performing the work. Additionally, this view shows the overall feedback collection mechanism for process oversight.

The process execution view exemplifies data that addresses:

When is the process planned to be executed?

When is the process actually performed?

What were the components used for the process including:

- What are the material substances
- What is the amount of material
- What equipment, including serial numbers
- Controls, including specific engineering, administrative and personal protective equipment
- Disposal methods and quantities for generated by-products
- People performing the process and being exposed to the hazards
- Location, time and date of the activity
- Is there any feedback applicable to any component of the process, such as the material, equipment, people, controls, etc?
- What exposure is an individual subjected to as a result of performing the process?
- Is the object that the process was performed on regulated by the installation's air permit

What is the status of a process execution?

What are the actual permits used for process execution?

What is the air emissions bubble for a shop?

Figure 12: HPA Logical Data Model View – Process Execution

Graphics placeholder – please see companion files for model view graphics.

Table 6: Hazardous Process Authorization logical data model entity names and entity descriptions

Entity Name	Entity Description
ADMINISTRATIVE-CONTROL	A CONTROL that can bound a HAZARDOUS-PROCESS using policies, rules, supervision, training, or other procedural methods with the goal of reducing the duration, frequency, and severity of exposure to hazardous chemicals or situations.
AREA-EMISSION-LIMIT	A limit for the air emissions of a particular location, equipment, or chemical as defined by a PERMIT-SPECIFICATION.
BY-PRODUCT	A product, substance, emission or release that results from the performance of a HAZARDOUS-PROCESS.. that must be accounted for and is no longer useful in the original HAZARDOUS-PROCESS..
BY-PRODUCT-DISPOSAL-CONSIDERATION	A DISPOSAL-CONSIDERATION associated with the elimination, recycling, or reclamation or a BY-PROUDCT.
BY-PRODUCT-MATERIAL	A MATERIAL identified in a BY-PRODUCT.
CERTIFICATION	A formal recognition for developed aptitude or ability, usually acquired through education, training, and experience.
CERTIFICATION-GRANTING-ORGANIZATION	An ORGANIZATION accredited to issue a type of CERTIFICATION.
CERTIFICATION-SKILL	The SKILL required for a CERTIFICATION.
CERTIFICATION-TYPE	A categorization or classification for a CERTIFICATION.
CONTROL	A kind of restraint, limitation, or rule that can bound a HAZARDOUS-PROCESS.
CONTROL-GUIDANCE	A GUIDANCE associated with a CONTROL.
DIMENSION	Any of a set of physical properties whose values determine the characteristics or behavior of something. [Merriam-Webster] The combination of a dimension value, dimension type, and unit of measure is used to define or describe the subject. For example if the subject of a dimension is the wall of a building, a dimension is used to record an aspect (height) of the wall: Dimension value: 10 Unit of Measure: Feet Dimension Type: Height.
DISPOSAL-CONSIDERATION	Information that is relevant to and will assist in determining the safe and environmentally preferred waste management options for the elimination, recycling, reclamation of SUBSTANCEs.

Entity Name	Entity Description
ENGINEERING-CONTROL	A CONTROL that can eliminate or reduce exposure to a chemical or physical hazard through the use of or substitution of machinery or equipment, or other non-personnel physical methods. Examples include self-capping syringe needles, ventilation systems such as a fume hood, sound-dampening materials to reduce noise levels, safety interlocks, and radiation shielding.
ENGINEERING-CONTROL-PERMIT-TYPE	A type of PERMIT required for ENGINEERING-CONTROL.
ESOH-ASPECT	An element of an organization's activities, products, or services that can interact with the environment (ISO 14001) or can cause injury, illness, or death to personnel (MIL-STD-882D). Aspects can be regulated or non-regulated, natural or man-made, positive or negative, or controlled or influenced by the organization. Examples include: waste water, air emissions, solid waste, hazardous waste, noise, traffic, use of chemicals, radiation, dust, etc.
ESOH-ASPECT-IMPACT	A change to the environment as a result of an ESOH-ASPECT.
ESOH-ASPECT-IMPACT-ASSESSMENT	An ASSESSMENT of ESOH ASPECTS and IMPACTS related to a HAZARDOUS-PROCESS.
ESOH-ASPECT-SUBSTANCE	A SUBSTANCE associated to an ESOH-ASPECT. This association allows the medical community to evaluate ESOH-ASPECT and hazards not tied directly to products. For example, dust, noise, chrome, etc.
EXPOSURE-EVENT	An occurrence of contact of a chemical, physical, or biological agent with the outer boundary of an organism associated with a mishap.
GUIDANCE	An interpretation and implementation of Policy within the DoD. Guidance takes the form of regulations, directives, circulars, instructions, manuals, standard operating procedures (SOPs), etc.
HAZARDOUS-PROCESS	A kind of activity defined to the level of granularity necessary to define effective ESOH controls.
HAZARDOUS-PROCESS-ASPECT	An ASPECT associated with a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-AUTHORIZATION	The formal permission (or denial of permission) to conduct an operational process (unit of work) under a specified set of terms and conditions. An authorization sets the terms and conditions that pertain to people, process, equipment, location, materiel, and other factors that combine to execute the unit of work.
HAZARDOUS-PROCESS-AUTHORIZATION-ASPECT	An ASPECT of a HAZARDOUS-PROCESS that has been validated or approved by a HAZARDOUS-PROCESS-AUTHORIZATION.
HAZARDOUS-PROCESS-AUTHORIZATION-BY-PRODUCT	A BY-PRODUCT that has been approved by a HAZARDOUS-PROCESS-AUTHORIZATION as a result of performing a HAZARDOUS-PROCESS.

Entity Name	Entity Description
HAZARDOUS-PROCESS-AUTHORIZATION-CONTROL	A CONTROL that has been approved by a HAZARDOUS-PROCESS-AUTHORIZATION for application to a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-AUTHORIZATION-DISPOSAL-CONSIDERATION	An authorized method to eliminate, recycle, or reclaim a BY-PRODUCT that results from performing a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-AUTHORIZATION-EQUIPMENT	A MATERIAL-ASSET that has been approved for use as EQUIPMENT by a HAZARDOUS-PROCESS-AUTHORIZATION for the relevant HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-AUTHORIZATION-LOCATION	A LOCATION that has been approved by a HAZARDOUS-PROCESS-AUTHORIZATION. For example, location to perform the HAZARDOUS-PROCESS, store hazardous materials and by-products, etc.
HAZARDOUS-PROCESS-AUTHORIZATION-MATERIAL	A MATERIAL that has been approved by a HAZARDOUS-PROCESS-AUTHORIZATION for use in a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-AUTHORIZATION-MEDICAL-CONTROL	A MEDICAL-CONTROL that has been approved by a HAZARDOUS-PROCESS-AUTHORIZATION for application in a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-AUTHORIZATION-PERMIT	A PERMIT that has been approved by a HAZARDOUS-PROCESS-AUTHORIZATION for use in a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-AUTHORIZATION-PERSON	A role a PERSON is assigned for a HAZARDOUS-PROCESS-AUTHORIZATION. For example, Requestor, Approver, Reviewer, Certifier etc.
HAZARDOUS-PROCESS-AUTHORIZATION-PROPERTY-OBJECT	A piece of property upon which the relevant HAZARDOUS-PROCESS is authorized to be performed.
HAZARDOUS-PROCESS-AUTHORIZATION-SHOP-LOCATION	A SHOP-LOCATION to perform a HAZARDOUS-PROCESS that has been authorized by a HAZARDOUS-PROCESS-AUTHORIZATION.
HAZARDOUS-PROCESS-AUTHORIZATION-STATUS	A state of a HAZARDOUS-PROCESS-AUTHORIZATION. For example: in-progress, submitted, reviewed, approved, rejected, conditionally approved.
HAZARDOUS-PROCESS-BY-PRODUCT	A PRODUCT, SUBSTANCE, emission or release that results from the performance of a HAZARDOUS-PROCESS, that must be accounted for, and is no longer useful in the original HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-CATEGORY	The first level of classification used to logically group HAZARDOUS-PROCESSes. For example: In Industrial/Painting, Industrial is the HAZARDOUS-PROCESS-CATEGORY.
HAZARDOUS-PROCESS-CERTIFICATION	A CERTIFICATION required to perform a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-CONTROL	A kind of restraint, limitation, or rule that may be applied during the performance of a HAZARDOUS-PROCESS.

Entity Name	Entity Description
HAZARDOUS-PROCESS-COST	A cost for a HAZARDOUS-PROCESS. Types of costs may include: labor, materials, training, waste generation, facility operations, etc. Note: This entity has been added to the data model as a placeholder; the intent is to link to the appropriate cost data structure in a future release.
HAZARDOUS-PROCESS-EQUIPMENT	A kind or type of equipment that may be used during the performance of a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-EQUIPMENT-CONTROL	A CONTROL imposed on EQUIPMENT for a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-EQUIPMENT-MATERIAL	The EQUIPMENT and MATERIAL combination that may be used during the performance of a specific HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-EXECUTION	A specific instance of a HAZARDOUS-PROCESS that is performed.
HAZARDOUS-PROCESS-EXECUTION-ASPECT	An ASPECT applicable to a HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-BY-PRODUCT	A BY-PRODUCT generated from the execution of a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-EXECUTION-CONTROL	A CONTROL used during a HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-DISPOSAL-CONSIDERATION	A DISPOSAL-CONSIDERATION applied during a PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-EQUIPMENT	A MATERIEL-ASSET used as equipment during a PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-FEEDBACK	FEEDBACK applicable to a HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-INSPECTION	A REVIEW of a HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-LOCATION	An execution of a specific HAZARDOUS-PROCESS at a specific LOCATION.
HAZARDOUS-PROCESS-EXECUTION-LOG	A compliance requirement record-keeping instrument associated with a HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-MATERIAL	A MATERIAL used during a HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-PERMIT	A PERMIT used during a specific HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-PERSON	A PERSON who perform at least part of or a role for a HAZARDOUS-PROCESS-EXECUTION.

Entity Name	Entity Description
HAZARDOUS-PROCESS-EXECUTION-PROPERTY-OBJECT	An DoD item that is the subject of a specific HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-STATUS	A state associated with a HAZARDOUS-PROCESS-EXECUTION. For example: Scheduled, In-progress, Stopped, Completed.
HAZARDOUS-PROCESS-GUIDANCE	A GUIDANCE that applies to a HAZARDOUS-PROCESS. For example, regulations, laws, technical orders, etc.
HAZARDOUS-PROCESS-INSPECTION	An inspection of a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-MATERIAL	A product or type of product that may be consumed or used during the performance of a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-MATERIAL-CONTROL	A CONTROL imposed on MATERIAL for a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-MEDICAL-CONTROL	A MEDICAL-CONTROL required to perform a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-METHOD	The third level of classification used to logically classify a HAZARDOUS-PROCESS. For example, in Industrial/Painting/HVLP, HVLP (high volume low pressure) is the HAZARDOUS-PROCESS-METHOD.
HAZARDOUS-PROCESS-OWNER	A SHOP that is responsible for HAZARDOUS-PROCESS template for a period of time.
HAZARDOUS-PROCESS-PERMIT-CONTROL-TYPE	A kind of PERMIT-CONTROL required to perform a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-PROPERTY-OBJECT	A uniquely identified government-owned item that is the subject of a specific HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-SIMILAR-EXPOSURE-GROUP	A SIMILAR-EXPOSURE-GROUP associated with a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-SKILL	A SKILL required to perform a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-STATUS	The state associated with a HAZARDOUS-PROCESS. For example: Draft, Approved, etc.
HAZARDOUS-PROCESS-TYPE	The second level of classification used to logically classify a HAZARDOUS-PROCESS. For example: In Industrial/Painting, Painting is the HAZARDOUS-PROCESS-TYPE.
IMPACT	A change to the environment, work area or worker, whether adverse or beneficial, wholly or partially resulting from the HAZARDOUS-PROCESS. Impacts are the actual result of environmental aspects. For example, if an ASPECT (hazard) is air emissions, the IMPACT (risk) may be air pollution, an ozone hole, or bodily injury .
INSPECTION	An official examination or review of an item of interest for purposes of determining its condition or state.

Entity Name	Entity Description
INSPECTION-FINDING	A determination made as to the result of the INSPECTION.
INSPECTION-ITEM	A detail, item, or object that is the specific focus of an investigation.
INSPECTION-PERSON	The PERSON that has a role with respect to the INSPECTION.
INSTRUCTIONAL-UNIT	An ordered arrangement of subject matter intended to be taught.
LOCATION	A place of interest to DoD. It may be associated to a geo-political area such as an address, city, county, country, etc. It may be associated to a geo-physical area such as a point (latitude and longitude), or a collection of points (circumference, area).
LOCATION-ORGANIZATION	The LOCATION for an organization.
MATERIAL	A kind of distinctly identifiable physical matter about which the DoD wants to track information. Examples include gasoline, friable asbestos, hexavalent chromium, dry ice, the secret ingredient in a popular soft drink, a D battery, a depleted Uranium alloy, Coca Cola in a 12 oz Aluminum can, a 12 oz Aluminum can, a 5 gal can of eggshell white latex paint, a specific batch of jet fuel, and a six-pack of 16-oz bottles of ACME Orange Soda.
MATERIEL-ASSET	A uniquely identified government-owned item that is intended for use or is available for use by the DoD, and related agencies or services, but not intended for sale in the normal course of operations.
MATERIEL-CATALOG-ITEM	A specific item that may be purchased or produced by the DoD. It is unique either by composition (a computer configuration) or container (Acme Paint Thinner in 12 oz. can vs. 20 oz. bottle).
MATERIEL-CATALOG-ITEM-DIMENSION	A physical characteristic of an instance of MATERIEL-CATALOG-ITEM. Examples: Cube, (Volume), Footprint (Area), Height, Length, Weight, Width.
MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD	A contiguous time when the characteristics of the related MATERIAL are approved, authorized, or acknowledged to encompass the characteristics set forth in related MATERIEL-CATALOG-ITEM.
MATERIEL-ELEMENT-TYPE	A type of ACQUISITION-ELEMENT that identifies a type of materiel (equipment, apparatus, or supplies) that might be acquired by DoD from a SUPPLIER, or sold between US-DOD-FEDERAL-ORGANIZATION-SUPPLIERs.
MEDICAL-CONTROL	A medical limitation, restriction or rule.
ORGANIZATION	An ORGANIZATION can be a company, corporation, firm, enterprise or institution, or part thereof (whether incorporated or not, public or private) that has its own function(s) and administration that supplies products or services to other organizations.
ORGANIZATION-CERTIFICATION	A CERTIFICATION held by an ORGANIZATION. For example, an organization that is certified to haul waste.
ORGANIZATION-ROLE	A functional relationship between an organization and how it performs a task.

Entity Name	Entity Description
PERMIT	An agreement between an installation and regulatory agency that controls releases, allows, and limits a process.
PERMIT-CONTROL-TYPE	A CONTROL that categorizes a type of PERMIT requirement for HAZARDOUS-PROCESS.
PERMIT-EQUIPMENT	A PERMIT that governs EQUIPMENT.
PERMIT-LOCATION	A PERMIT granted to a LOCATION, such as a SHOP, INSTALLATION, or work area.
PERMIT-SPECIFICATION	A condition, restriction, or limitation that has been specified for a PERMIT.
PERSON	A human being of interest to the DoD.
PERSONAL-PROTECTIVE-EQUIPMENT-CONTROL	A CONTROL that can eliminate or reduce exposure to a chemical hazard through the use of or substitution of a variety of clothing and other work accessories worn by a PERSON. Personal protective equipment includes articles to protect the eyes, skin, and the respiratory tract (e.g. goggles, face shields, coats, gloves, aprons, respirators).
PERSON-CERTIFICATION	A CERTIFICATION obtained by a PERSON.
PERSON-EXPOSURE	A PERSON associated with an EXPOSURE as a result of a HAZARDOUS-PROCESS-EXECUTION.
PERSON-HEALTH-HISTORY	Previous HEALTH-CONDITIONs pertaining to a PERSON, including conditions that occurred prior to their association with the DoD.
PERSON-INSTRUCTIONAL-UNIT	An INSTRUCTIONAL-UNIT for a PERSON.
PERSON-ORGANIZATION	The association between a PERSON and an ORGANIZATION.
PERSON-SHIFT	The work SHIFT for a PERSON.
PERSON-SKILL	A SKILL that has been attained by a PERSON.
PROPERTY	Something tangible or intangible to which DoD has legal title or interest in.
REAL-PROPERTY	A REAL-PROPERTY-ASSET or REAL-PROPERTY-ASSET-MODULE of interest to DoD.
RELEASE-MEDIUM-TYPE	A categorization of environmental media (medium) into which a by-product is released.
RISK-ASSESSMENT	An evaluation of the aspects/impacts or risk/hazards, exposure, mishaps, or any consequences of concern.
ROUTE-OF-EXPOSURE	A way people come into contact with a hazardous substance. The routes of exposure are breathing [inhalation], eating or drinking [ingestion], or contact with the eye or skin [dermal contact].
SHIFT-TYPE	A common identification given for a specific period of time. For example, First Shift, Graveyard Shift.
SHOP	A group of people that share a common mission or workload, a supervisor, and common potential exposure to hazards.

Entity Name	Entity Description
SHOP-GROUP	A collection of SHOPs that perform similar functions. For example, All corrosion control.
SHOP-GROUP-SHOP	An association of a SHOP to a SHOP-GROUP.
SHOP-LOCATION	A LOCATION for a SHOP.
SHOP-SHIFT	The SHIFT for a SHOP.
SIMILAR-EXPOSURE-GROUP	A group of people who share exposure to similar hazards in one or more Processes over a period of time.
SIMILAR-EXPOSURE-GROUP-PERSON	A PERSON associated with a SIMILAR-EXPOSURE-GROUP.
SKILL	A developed aptitude or ability, usually acquired through education, training, and experience.
SUBSTANCE	A MATERIAL having no inherent limit in extent; therefore without size or shape for example, green paint, hydrochloric acid, dry ice, or Coca Cola syrup.
UNIT-OF-MEASURE	The scale employed to describe a dimension, quality, or capacity determined by measuring. Example of units of measure include: Feet; Inch; Square Foot; Yard; Gallon; Centimeter.

TAB E: Hazardous Process Authorization Logical Data Model Attributes and Attribute Descriptions

Table 7: Hazardous Process Authorization attributes and attributes descriptions

Entity Name	Attribute Name	Attribute Description
ADMINISTRATIVE-CONTROL	Administrative_Control_Description_Text	A statement providing details about an ADMINISTRATIVE-CONTROL.
ADMINISTRATIVE-CONTROL	Administrative_Control_Name	The common identification or name used to identify an ADMINISTRATIVE-CONTROL.
ADMINISTRATIVE-CONTROL	Administrative_Control_Type_Name	The character string that identifies a type of ADMINISTRATIVE-CONTROL.
AREA-EMISSION-LIMIT	Area_Emission_Limit_Identifier	The character string that identifies an instance of an AREA-EMISSION-LIMIT.
AREA-EMISSION-LIMIT	Area_Emission_Limit_Quantity_Limit	The numeric value that represents the limit on the total quantity of emissions for an AREA-EMISSION-LIMIT.
AREA-EMISSION-LIMIT	Area_Emission_Limit_Quantity_Limit_UOM	The code that represents the units in which a value for the area emission limit quantity is being expressed, or manner in which a measurement has been taken.
AREA-EMISSION-LIMIT	Area_Emission_Limit_Start_Date	The calendar day for which an AREA-EMISSION-LIMIT begins.
AREA-EMISSION-LIMIT	Area_Emission_Limit_Stop_Date	The calendar day for which an AREA-EMISSION-LIMIT ends.
BY-PRODUCT	By_Product_Containerized_Waste_Indicator	The identifier that represents the HAZARDOUS-PROCESS will generate waste that can be containerized.
BY-PRODUCT	By_Product_Description_Text	A statement providing details about the product, substance, emission or release that results from the performance of a process step that must be accounted for and is no longer useful in the original process.
BY-PRODUCT	By_Product_Identifier	The designator that distinguishes one PROPERTY from another.
BY-PRODUCT	By_Product_Name	The common identification or name used to refer to the product, substance, emission or release that results from the performance of a process step that must be accounted for and is no longer useful in the original process.
BY-PRODUCT	By_Product_Quantity	The numeric value in a unit of measure that describes the amount or other dimension of the by-product. Examples may include: 6 for a by-product of Metal tailings measured in pounds.
BY-PRODUCT	By_Product_Unit_of_Measure	The scale employed to describe a dimension, quality, or capacity used for measurement of the amount of the by-product. Examples may include: feet, inch, cm, mm, acre, gallon, cubic feet per minute.
CERTIFICATION	Certification_Description_Text	The text that details an explanation for the CERTIFICATION.
CERTIFICATION	Certification_Identifier	The character string that uniquely identifies an instance of a CERTIFICATION.

Entity Name	Attribute Name	Attribute Description
CERTIFICATION	Certification_Name	The character string that serves as a common identifier for a CERTIFICATION.
CERTIFICATION-SKILL	Certification_Skill_Start_Date	The calendar day a SKILL begins as a criteria for a CERTIFICATION.
CERTIFICATION-SKILL	Certification_Skill_Stop_Date	The calendar day a SKILL ends as a criteria for a CERTIFICATION.
CERTIFICATION-TYPE	Certification_Type_Description_Text	The text detailing an explanation for a certification category.
CERTIFICATION-TYPE	Certification_Type_Name	The character string that uniquely identifies a certification category or classification.
CONTROL	Control_Category_Code	The common identification or name that represents the primary classification for a CONTROL. For example, Engineering, Administrative, PPE.
CONTROL	Control_Description_Text	A statement providing details about a CONTROL.
CONTROL	Control_Name	The common identification or name used to refer to a CONTROL.
CONTROL	Control_Start_Date	The calendar day on which a CONTROL became active or was created.
CONTROL	Control_Stop_Date	The calendar day on which a CONROL became inactive or ended.
CONTROL	Control_Type_Code	The common identification or name that represents the general class type for a CONTROL. For example, Signs/Distance, Training, Emergency Wash, Ergonomics, Ventilation, etc.
DIMENSION	Dimension_Category_Code	The determination of the category of a DIMENSION based upon the Dimension_Category_Code. Examples of the Dimension_Category_Code are: LOCATION-GEOGRAPHIC-DIMENSION; GEOPOLITICAL-SPATIAL-AREA-GEOGRAPHIC-DIMENSION.
DIMENSION	Dimension_Description_Text	A statement providing details about the DIMENSION. An example of the use of Dimension_Description_Text is associated with environmental sample collection. When collecting environmental samples, the collector may record general weather observations surrounding the sample collection effort (e.g., the sky was cloudy, the seas were choppy) using Dimension_Description_Text.
DIMENSION	Dimension_Identifier	The designator that distinguishes one DIMENSION from another.
DIMENSION	Dimension_Source_Type_Code	A symbol that stands for the method or source type used to obtain the value for the DIMENSION. Examples of Dimension_Source_Type_Code include: Estimate; Measurement; Reference.
DIMENSION	Dimension_Source_Type_Code	A symbol that stands for the method or source type used to obtain the value for the DIMENSION. Examples of Dimension_Source_Type_Code include: Estimate; Measurement; Reference.
DIMENSION	Dimension_Source_Type_Code	A symbol that stands for the method or source type used to obtain the value for the DIMENSION. Examples of Dimension_Source_Type_Code include: Estimate; Measurement; Reference.
DIMENSION	Dimension_Type_Code	The symbol that stands for the DIMENSION-TYPE.

Entity Name	Attribute Name	Attribute Description
DIMENSION	Dimension_Value_Quantity	The number representing a quantity, amount or other associated value for the object being measured. For Example: If a storage tank was the equipment item associated with a dimension then a combination of Dimension Value Qty, Unit of Measure (UOM), and Dimension Type is used to express one dimension of the tank in the following manner. Dimension Value Qty 7,000 Unit of Measure Gallons Dimension Type blank
DISPOSAL-CONSIDERATION	Disposal_Consideration_Details_Text	A statement providing details about a DISPOSAL-CONSIDERATION.
DISPOSAL-CONSIDERATION	Disposal_Consideration_Identifier	The unique identifier used to refer to an DISPOSAL-CONSIDERATION.
DISPOSAL-CONSIDERATION	Disposal_Consideration_Name	A commonly understood term for a DISPOSAL-CONSIDERATION.
ENGINEERING-CONTROL	Engineering_Control_Description_Text	A statement providing details about an ENGINEERING-CONTROL.
ENGINEERING-CONTROL	Engineering_Control_Name	The common identification or name used to identify an ENGINEERING-CONTROL. For example: A fume hood is of Ventilation System type.
ENGINEERING-CONTROL	Engineering_Control_Type_Name	The common identification or name used to identify the type of ENGINEERING-CONTROL. For example: Ventilation Systems, Barriers, etc.
ESOH-ASPECT	ESOH_Aspect_Description_Text	A statement providing details about an ESOH-ASPECT.
ESOH-ASPECT	ESOH_Aspect_Exposure_Point_Body_Indicator	A code that denotes whether the exposure point is the PERSON's body. Examples: Yes/No.
ESOH-ASPECT	ESOH_Aspect_Identifier	The unique identifier used to refer to an ESOH-ASPECT.
ESOH-ASPECT	ESOH_Aspect_Name	The common identification or name used to identify an ESOH-ASPECT. For example: Air emission for Environmental Aspect type, Hazard communication for Occupational Health Aspect type.
ESOH-ASPECT	ESOH_Aspect_Type_Name	The common identification or name used to identify the category(ies) an ESOH-ASPECT may belong to. For example: Environmental Aspect, Safety Aspect, and Occupational Health Aspect.
EXPOSURE-EVENT	Exposure_Begin_Date_Time	The calendar date and time EXPOSURE begins.
EXPOSURE-EVENT	Exposure_Description_Text	The text detailing an explanation for the EXPOSURE.
EXPOSURE-EVENT	Exposure_End_Date_Time	The calendar date and time EXPOSURE ends.
EXPOSURE-EVENT	Exposure_Identifier	The character string that uniquely identifies an instance of EXPOSURE to a place or thing.
GUIDANCE	Guidance_Authority_Text	The text of the authority for promulgating guidance.
GUIDANCE	Guidance_Begin_Calendar_Date	The calendar date-time on which guidance starts.
GUIDANCE	Guidance_Category_Code	The code that denotes a specific class of guidance.
GUIDANCE	Guidance_End_Calendar_Date	The calendar date-time on which guidance concludes.
GUIDANCE	Guidance_Identifier	The identifier that represents an occurrence of guidance.

Entity Name	Attribute Name	Attribute Description
GUIDANCE	Guidance_Issue_Calendar_Date	The calendar date-time that a guidance is issued.
GUIDANCE	Guidance_Issue_Calendar_Date	The calendar date-time that a guidance is issued.
GUIDANCE	Guidance_Name	The name of a guidance.
GUIDANCE	Guidance_Subject_Text	The text that describes the topic of a guidance.
GUIDANCE	Guidance_Synopsis_Text	The text that provides a condensed description of an occurrence of guidance.
GUIDANCE	Guidance_Text	The text of an occurrence of guidance in its entirety.
GUIDANCE	Guidance_Type_Code	A reference categorizing the type of guidance represented or applied.
HAZARDOUS-PROCESS	Hazardous_Process_Confined_Space_Indicator	A flag that denotes whether a HAZARDOUS-PROCESS is performed in a confined space.
HAZARDOUS-PROCESS	Hazardous_Process_Description_Text	A statement providing details about the work in a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS	Hazardous_Process_Duration_Quantity	The numeric value that represents a period of time bounded by the start and stop of the HAZARDOUS-PROCESS. For example: 4 for 4 hours.
HAZARDOUS-PROCESS	Hazardous_Process_Duration_Unit_of_Measure	The scale that measures the magnitude of the length of the HAZARDOUS-PROCESS. For example, hours, minutes, etc.
HAZARDOUS-PROCESS	Hazardous_Process_Effective_End_Date_Time	The calendar day and time a HAZARDOUS-PROCESS will expire.
HAZARDOUS-PROCESS	Hazardous_Process_Effective_Start_Date_Time	The calendar day and time a HAZARDOUS-PROCESS will become active.
HAZARDOUS-PROCESS	Hazardous_Process_Identifier	The designator that distinguishes one HAZARDOUS-PROCESS from another.
HAZARDOUS-PROCESS	Hazardous_Process_Indoor_Indicator	A flag that denotes whether a HAZARDOUS-PROCESS is performed in an enclosed space.
HAZARDOUS-PROCESS	Hazardous_Process_Maximum_Frequency_Quantity	The numeric value representing how many times a HAZARDOUS-PROCESS can be performed in a given time period.
HAZARDOUS-PROCESS	Hazardous_Process_Maximum_Frequency_Unit_Of_Measure	The scale employed to measure the number of times a HAZARDOUS-PROCESS is performed. For example, hours, minutes, day, month, year, etc.
HAZARDOUS-PROCESS	Hazardous_Process_Method_Type_Name	The common identification or name used to refer to the third level logical classification for a HAZARDOUS-PROCESS. For example, in Industrial/Painting/HVLP, HVLP (high volume low pressure) is the HAZARDOUS-PROCESS-METHOD.
HAZARDOUS-PROCESS	Hazardous_Process_Name	The common identification or name used to refer to a HAZARDOUS-PROCESS. For example: Paint an F16 Aircraft with HVLP Gun.
HAZARDOUS-PROCESS	Hazardous_Process_Outdoor_Indicator	A flag that denotes whether a HAZARDOUS-PROCESS is performed in open air.
HAZARDOUS-PROCESS	Hazardous_Process_Outdoor_Indicator	A flag that denotes whether a HAZARDOUS-PROCESS is performed in open air.
HAZARDOUS-	Hazardous_Process_Personnel_Quantity	The numeric value that represents the typical amount of personnel required to

Entity Name	Attribute Name	Attribute Description
PROCESS		perform the HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS	Hazardous_Process_Restricted_Space_Indicator	A flag that denotes whether a HAZARDOUS-PROCESS is performed in a small or restricted space.
HAZARDOUS-PROCESS	Hazardous_Process_Restricted_Space_Indicator	A flag that denotes whether a HAZARDOUS-PROCESS is performed in a small or restricted space.
HAZARDOUS-PROCESS	Hazardous_Process_Seasonal_Description_Text	A statement providing details about the possible effects of seasons on the performance of a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS	Hazardous_Process_Type_Name	The common identification or name used to refer to a kind of HAZARDOUS-PROCESS within a particular classification. For example, in Industrial/Painting/Brush, Painting is a kind of process within processes classified as industrial.
HAZARDOUS-PROCESS	Replaced_Process_Identifier	The designator that distinguishes one replaced HAZARDOUS-PROCESS from another.
HAZARDOUS-PROCESS-AUTHORIZATION	Hazardous_Process_Authorization_End_Date	The calendar day a HAZARDOUS-PROCESS-AUTHORIZATION will become inactive.
HAZARDOUS-PROCESS-AUTHORIZATION	Hazardous_Process_Authorization_Identifier	The designator that distinguishes one HAZARDOUS-PROCESS-AUTHORIZATION from another.
HAZARDOUS-PROCESS-AUTHORIZATION	Hazardous_Process_Authorization_Manual_Log_Indicator	A flag denoting a manual log is required for compliance reporting. This determination is made during HAZARDOUS-PROCESS-AUTHORIZATION.
HAZARDOUS-PROCESS-AUTHORIZATION	Hazardous_Process_Authorization_Start_Date	The calendar day a HAZARDOUS-PROCESS-AUTHORIZATION will become active.
HAZARDOUS-PROCESS-AUTHORIZATION	Hazardous_Process_Authorization_Start_Date	The calendar day a HAZARDOUS-PROCESS-AUTHORIZATION will become active.
HAZARDOUS-PROCESS-AUTHORIZATION	Replaced_Process_Authorization_Identifier	The designator that distinguishes one HAZARDOUS-PROCESS-AUTHORIZATION from another.
HAZARDOUS-PROCESS-AUTHORIZATION-MATERIAL	Hazardous_Process_Authorization_Material_Draw_Frequency	The numeric value that represents the authorized rate of recurrence for issuing MATERIAL required to perform the HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-AUTHORIZATION-	Hazardous_Process_Authorization_Material_Draw_Frequency_UOM	The scale that represents the units in which a value is being expressed for the authorized rate at which a material can be issued. For example: Gallons, Yards, etc.

Entity Name	Attribute Name	Attribute Description
MATERIAL		
HAZARDOUS-PROCESS-AUTHORIZATION-MATERIAL	Hazardous_Process_Authorization_Material_Draw_Quantity	The numeric value that represents the authorized total quantity of the same material that may be drawn to perform the HAZARDOUS-PROCESS. Examples may include: 3 for three gallons of the same oil paint material.
HAZARDOUS-PROCESS-AUTHORIZATION-MATERIAL	Hazardous_Process_Authorization_Material_Draw_UOM	The scale that represents the units in which a value is being expressed for a authorized quantity of material to be issued. For example: Gallons, Yards, etc.
HAZARDOUS-PROCESS-AUTHORIZATION-MATERIAL	Hazardous_Process_Authorization_Material_Maximum_Quantity	The numeric value that represents the authorized maximum amount of the material at hand at any given time. For example: 12 for 12 Drums.
HAZARDOUS-PROCESS-AUTHORIZATION-MATERIAL	Hazardous_Process_Authorization_Material_Order_Quantity	The numeric value that represents the authorized total quantity of the same material that may be ordered to perform the HAZARDOUS-PROCESS. Examples may include: 3 for three gallons of the same oil paint material.
HAZARDOUS-PROCESS-AUTHORIZATION-MATERIAL	Hazardous_Process_Authorization_Material_Order_UOM	The scale that represents the units in which a value is being expressed for a authorized quantity of material to be ordered. For example: Gallons, Yards, etc.
HAZARDOUS-PROCESS-AUTHORIZATION-MATERIAL	Hazardous_Process_Authorization_Material_Sequence_Comment_Text	The text that details an explanation for the order of sequence assigned to HAZARDOUS-PROCESS-AUTHORIZATION-MATERIAL..
HAZARDOUS-PROCESS-AUTHORIZATION-MATERIAL	Hazardous_Process_Authorization_Material_Sequence_Number	The numeric value that tracks the order of preference for authorized material.
HAZARDOUS-PROCESS-AUTHORIZATION-PERSON	Hazardous_Process_Authorization_Person_Role_Code	The character string that identifies the function or the responsibility a PERSON has for a HAZARDOUS-PROCESS-AUTHORIZATION.
HAZARDOUS-PROCESS-AUTHORIZATION-STATUS	Hazardous_Process_Authorization_Status_Code	The character string that identifies the state for a HAZARDOUS-PROCESS-AUTHORIZATION.
HAZARDOUS-	Hazardous_Process_Authorization_Status_C	The text detailing an explanation on the status for a HAZARDOUS-PROCESS-

Entity Name	Attribute Name	Attribute Description
PROCESS-AUTHORIZATION-STATUS	omment_Text	AUTHORIZATION.
HAZARDOUS-PROCESS-AUTHORIZATION-STATUS	Hazardous_Process_Authorization_Status_Date_Time	The calendar day and time applied for the status of a HAZARDOUS-PROCESS-AUTHORIZATION.
HAZARDOUS-PROCESS-CATEGORY	Hazardous_Process_Category_Description_Text	A statement providing details about the HAZARDOUS-PROCESS-CATEGORY.
HAZARDOUS-PROCESS-CATEGORY	Hazardous_Process_Category_Name	The common identification or name used to classify a HAZARDOUS-PROCESS. For example, in Industrial/Painting/Brush, Industrial is the classification.
HAZARDOUS-PROCESS-CERTIFICATION	Hazardous_Process_Certification_Start_Date	The calendar day on which a CERTIFICATION for a HAZARDOUS-PROCESS became active.
HAZARDOUS-PROCESS-CERTIFICATION	Hazardous_Process_Certification_Stop_Date	The calendar day on which a CERTIFICATION for a HAZARDOUS-PROCESS ended.
HAZARDOUS-PROCESS-CONTROL	Hazardous_Process_Control_Start_Date	The calendar day on which a HAZARDOUS-PROCESS-CONTROL became available for use within DoD.
HAZARDOUS-PROCESS-CONTROL	Hazardous_Process_Control_Stop_Date	The last calendar day on which a HAZARDOUS-PROCESS-CONTROL was available for use within DoD.
HAZARDOUS-PROCESS-COST	Hazardous_Process_Cost_Identifier	A designator for a unique instance of PROCESS-COST.
HAZARDOUS-PROCESS-EQUIPMENT	Hazardous_Equipment_Identifier	The designator that distinguishes one equipment from another.
HAZARDOUS-PROCESS-EQUIPMENT	Hazardous_Process_Equipment_Required_Quantity	The numeric value that stands for the total count of the same EQUIPMENT required for the HAZARDOUS-PROCESS. For example: 3 for three vent fans of the same make and model.
HAZARDOUS-PROCESS-EXECUTION	Hazardous_Process_Execution_Actual_End_Date_Time	The actual calendar day and time the execution of a HAZARDOUS-PROCESS has ended.
HAZARDOUS-PROCESS-EXECUTION	Hazardous_Process_Execution_Actual_Start_Date_Time	The actual calendar day and time the execution of a HAZARDOUS-PROCESS has started.
HAZARDOUS-	Hazardous_Process_Execution_Identifier	The designator that distinguishes one HAZARDOUS-PROCESS-EXECUTION

Entity Name	Attribute Name	Attribute Description
PROCESS-EXECUTION		among all others for the same HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-EXECUTION	Hazardous_Process_Execution_Scheduled_End_Date_Time	The planned calendar day and time the execution of a HAZARDOUS-PROCESS is expected to end.
HAZARDOUS-PROCESS-EXECUTION	Hazardous_Process_Execution_Scheduled_Start_Date_Time	The planned calendar day and time the execution of a HAZARDOUS-PROCESS is expected to start.
HAZARDOUS-PROCESS-EXECUTION-BY-PRODUCT	Hazardous_Process_Execution_By_Product_Comment_Text	The text detailing explanation regarding the BY-PRODUCT generated during a HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-BY-PRODUCT	Hazardous_Process_Execution_By_Product_Quantity	The numeric value that represents the actual quantity of BY-PRODUCT generated as a result of a HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-BY-PRODUCT	Hazardous_Process_Execution_By_Product_UOM	The scale employed to describe a dimension, quality, or capacity used for measurement of the amount of the by-product generated from the execution of a HAZARDOUS-PROCESS. Examples may include: feet, inch, cm, mm, acre, gallon, cubic feet per minute.
HAZARDOUS-PROCESS-EXECUTION-DISPOSAL-CONSIDERATION	Hazardous_Process_Execution_Disposal_Consideration_Comment_Text	The text detailing an explanation on the DISPOSAL-CONSIDERATION for a HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-EQUIPMENT	Hazardous_Process_Execution_Equipment_By_Product_Quantity	The numeric value in a unit of measure that describes the amount or other dimension of the by-product generated from equipment used in a HAZARDOUS-PROCESS. Examples may include: 30 for a by-product of emissions measured in pounds.
HAZARDOUS-PROCESS-EXECUTION-EQUIPMENT	Hazardous_Process_Execution_Equipment_Comment_Text	A statement providing details about an EQUIPMENT used in a specific HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-EXECUTION-EQUIPMENT	Hazardous_Process_Execution_Equipment_Unit_Of_Measure	The scale employed to describe a dimension, quality, or capacity used for measurement of the amount of the by-product generated from equipment used in a HAZARDOUS-PROCESS. Examples may include: feet, inch, cm, mm, acre, gallon, cubic feet per minute.
HAZARDOUS-	Hazardous_Process_Execution_Feedback_	The text detailing an explanation or observation for a HAZARDOUS-

Entity Name	Attribute Name	Attribute Description
PROCESS-EXECUTION-FEEDBACK	Comment_Text	PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-INSPECTION	Hazardous_Process_Execution_Inspection_End_Date	The calendar day on which an INSPECTION for a HAZARDOUS-PROCESS-AUTHORIZATION ends.
HAZARDOUS-PROCESS-EXECUTION-INSPECTION	Hazardous_Process_Execution_Inspection_Start_Date	The calendar day on which an INSPECTION for a HAZARDOUS-PROCESS-AUTHORIZATION begins.
HAZARDOUS-PROCESS-EXECUTION-LOCATION	Hazardous_Process_Execution_Location_Comment_Text	The text detailing an explanation or feedback on the location where a HAZARDOUS-PROCESS-EXECUTION was performed.
HAZARDOUS-PROCESS-EXECUTION-LOG	Hazardous_Process_Execution_Log_Comment_Text	The text detailing an explanation or feedback on the execution of a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-EXECUTION-LOG	Hazardous_Process_Execution_Log_End_Date_Time	The actual calendar day and time the manual record keeping on the execution of a HAZARDOUS-PROCESS has ended.
HAZARDOUS-PROCESS-EXECUTION-LOG	Hazardous_Process_Execution_Log_Start_Date_Time	The actual calendar day and time the manual record keeping on the execution of a HAZARDOUS-PROCESS has started.
HAZARDOUS-PROCESS-EXECUTION-MATERIAL	Expendable_Material_Identifier	The designator that distinguishes one PROPERTY from another.
HAZARDOUS-PROCESS-EXECUTION-MATERIAL	Hazardous_Process_Execution_Material_Actual_Issued_Quantity	The numeric value that represents the actual total quantity of the same material that was issued to perform a PROCESS. Examples may include: 3 for three gallons of the same oil paint material.
HAZARDOUS-PROCESS-EXECUTION-MATERIAL	Hazardous_Process_Execution_Material_Actual_Issued_UOM	The scale that represents the units in which a value is being expressed for an actual quantity of material issued. Examples may include: Gallons for three gallons of the same oil paint material.
HAZARDOUS-PROCESS-	Hazardous_Process_Execution_Material_Actual_Unused_Quantity	The numeric value that represents the actual total quantity of the same material that was unused in the performance of HAZARDOUS-PROCESS. Examples

Entity Name	Attribute Name	Attribute Description
EXECUTION-MATERIAL		may include: 3 for three gallons of the same oil paint material.
HAZARDOUS-PROCESS-EXECUTION-MATERIAL	Hazardous_Process_Execution_Material_Actual_Unused_UOM	The scale that represents the units in which a value is being expressed for an actual quantity of material unused. Examples may include: Gallons for three gallons of the same oil paint material.
HAZARDOUS-PROCESS-EXECUTION-MATERIAL	Hazardous_Process_Execution_Material_Actual_Used_Quantity	The numeric value that represents the actual total quantity of the same material used to perform the HAZARDOUS-PROCESS. Examples may include: 3 for three gallons of the same oil paint material.
HAZARDOUS-PROCESS-EXECUTION-MATERIAL	Hazardous_Process_Execution_Material_Actual_Used_UOM	The scale that represents the units in which a value is being expressed for an actual quantity of material used. Examples may include: Gallons for three gallons of the same oil paint material.
HAZARDOUS-PROCESS-EXECUTION-MATERIAL	Hazardous_Process_Execution_Material_Comment_Text	The text detailing an explanation or feedback on the MATERIAL used in a specific HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-EXECUTION-PERSON	Hazardous_Process_Execution_Person_Comment_Text	The text detailing an explanation on the PERSON for a HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-PERSON	Hazardous_Process_Execution_Person_End_Date_Time	The calendar day and time a PERSON's participation in the execution of a HAZARDOUS-PROCESS-EXECUTION ends.
HAZARDOUS-PROCESS-EXECUTION-PERSON	Hazardous_Process_Execution_Person_Role_Code	The character string that identifies the function or role a PERSON plays HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-PERSON	Hazardous_Process_Execution_Person_Start_Date_Time	The calendar day and time a PERSON's participation in the execution of a HAZARDOUS-PROCESS-EXEUCTION begins.
HAZARDOUS-PROCESS-EXECUTION-PROPERTY-OBJECT	Hazardous_Process_Execution_Property_Object_Regulated_Indicator	A flag denoting the item for which is a HAZARDOUS-PROCESS is performed is also regulated by air and marine laws, regulations, etc.

Entity Name	Attribute Name	Attribute Description
HAZARDOUS-PROCESS-EXECUTION-STATUS	Hazardous_Process_Execution_Status_Code	The character string that uniquely identifies the state for a HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-EXECUTION-STATUS	Hazardous_Process_Execution_Status_Comment_Text	The text detailing an explanation on the status for a HAZARDOUS-PROCESS-EXECUTION-STATUS.
HAZARDOUS-PROCESS-EXECUTION-STATUS	Hazardous_Process_Execution_Status_Date_Time	The calendar day and time applied for the status of a HAZARDOUS-PROCESS-EXECUTION.
HAZARDOUS-PROCESS-INSPECTION	Hazardous_Process_Inspection_End_Date	The calendar day on which an INSPECTION for a HAZARDOUS-PROCESS end.
HAZARDOUS-PROCESS-INSPECTION	Hazardous_Process_Inspection_Start_Date	The calendar day on which an INSPECTION for a HAZARDOUS-PROCESS begins.
HAZARDOUS-PROCESS-MATERIAL	Hazardous_Process_Material_Required_Quantity	The numeric value that stands for the total quantity of the same material required to perform the HAZARDOUS-PROCESS. Examples may include: 3 for three gallons of the same oil paint material.
HAZARDOUS-PROCESS-MATERIAL	Hazardous_Process_Material_Unit_Of_Measure	The scale that represents the units in which a value is being expressed for a quantity of material needed to perform a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-MEDICAL-CONTROL-TYPE	Medical_Control_Type_Name	The common identification or name used to refer to a CONTROL.
HAZARDOUS-PROCESS-METHOD	Hazardous_Process_Method_Description_Text	A statement providing details about the HAZARDOUS-PROCESS-METHOD.
HAZARDOUS-PROCESS-OWNER	Hazardous_Process_Owner_End_Date_Time	The date and time for which ownership of a HAZARDOUS-PROCESS ends or becomes inactive.
HAZARDOUS-PROCESS-OWNER	Hazardous_Process_Owner_Start_Date_Time	The date and time for which ownership of a HAZARDOUS-PROCESS begins or becomes active.
HAZARDOUS-PROCESS-SKILL	Hazardous_Process_Skill_Start_Date	The calendar day on which a SKILL for a HAZARDOUS-PROCESS became active.
HAZARDOUS-PROCESS-SKILL	Hazardous_Process_Skill_Stop_Date	The calendar day on which a SKILL for a HAZARDOUS-PROCESS ended.
HAZARDOUS-	Hazardous_Process_Status_Code	The character string that uniquely identifies the state for a HAZARDOUS-

Entity Name	Attribute Name	Attribute Description
PROCESS-STATUS		PROCESS.
HAZARDOUS-PROCESS-STATUS	Hazardous_Process_Status_Comment_Text	The text detailing an explanation on the status for a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-STATUS	Hazardous_Process_Status_Date_Time	The calendar day and time applied for the status of a HAZARDOUS-PROCESS.
HAZARDOUS-PROCESS-TYPE	Hazardous_Process_Type_Description_Text	A statement providing details about the HAZARDOUS-PROCESS-TYPE.
IMPACT	Impact_Description_Text	A statement providing details about any change to the environment, work area or worker resulting from the HAZARDOUS-PROCESS.
IMPACT	Impact_Identifier	The designator that distinguishes one IMPACT from another.
IMPACT	Impact_Significance_Indicator	A determination of the significance or lack of significance resulting from an assessment of impacts from a comparison of the impact to an accepted standard.
IMPACT	Impact_Type_Name	The common identification or name used to refer to the classification of any change to the environment, work area or worker resulting from the HAZARDOUS-PROCESS. For example, if an ASPECT is air emissions, the impact may be air pollution, an ozone hole, or bodily injury .
INSPECTION	Inspection_Identifier	A unique identifier for the specific instance of an inspection.
INSPECTION	Inspection_Instruction_Text	Instructions about the general nature or purpose of the inspection.
INSPECTION	Inspection_Start_Date	The calendar day the inspection begins.
INSPECTION	Inspection_Stop_Date	The calendar day the inspection ends.
INSPECTION	Inspection_Type_Code	The symbol that denotes the type of INSPECTION. Examples of inspection types supported are: functionality assessment, problem diagnosis, etc.
INSPECTION-FINDING	Inspection_Finding_Date	The calendar date of the inspection finding.
INSPECTION-FINDING	Inspection_Finding_Description_Text	A statement providing details about the INSPECTION-FINDING.
INSPECTION-ITEM	Inspection_Item_Identifier	A character string that distinguishes one INSPECTION-ITEM from among all other INSPECTION-ITEMs that 'is based upon the same INSPECTION.
INSPECTION-ITEM	Inspection_Item_Inspection_Comments_Text	The text detailing an explanation for the INSPECTION-ITEM.
INSPECTION-ITEM	Inspection_Item_Inspection_End_Date	The calendar date inspection of the item ends.
INSPECTION-ITEM	Inspection_Item_Inspection_Start_Date	The calendar date inspection of the item begins.
INSPECTION-PERSON	Inspection_Person_Role_Code	The symbol that denotes the role of the PERSON with respect to the INSPECTION.
INSTRUCTIONAL-UNIT	Course_Type_Indicator	A character string that identifies whether the COURSE is "Training," which teaches how to perform one or more work-related tasks, or "Education," which teaches how to generally think and understand better.
INSTRUCTIONAL-	Educational_Discipline_Code	The code that represents an EDUCATIONAL-DISCIPLINE.

Entity Name	Attribute Name	Attribute Description
UNIT		
LOCATION	Location_Description_Text	A statement providing details about a LOCATION.
LOCATION	Location_Identifier	The designator that distinguishes one LOCATION from another.
LOCATION	Location_Name	The common identification or name used to identify a LOCATION.
LOCATION	Location_Role_Type_Code	The common identification or name that classifies the role that a LOCATION may fulfill.
LOCATION	Location_Start_Date	The calendar day that the functional or operation role of the ORGANIZATION with respect to the LOCATION begins.
LOCATION	Location_Stop_Date	The calendar day that the functional or operational role of the ORGANIZATION with respect to the LOCATION ends.
LOCATION	Location_Type_Code	The common identification or name that classifies a LOCATION.
LOCATION-ORGANIZATION	Location_Organization_Role_Code	The common identification or name that represents the role a LOCATION plays for an ORGANIZATION.
MATERIAL	Material_Appearance_Details_Text	A thorough description of the way the MATERIAL looks to the naked eye. For example: A thick, light pink liquid containing minute specks of purple sediment distributed throughout.
MATERIAL	Material_Appearance_Summary_Text	A brief description of the way the MATERIAL looks to the naked eye. For example: Cloudy and pink.
MATERIAL	Material_Comments_Text	Explanatory information about the MATERIAL. For example: 'This substance is a mixture of isomers where the ratio is unknown.'
MATERIAL	Material_Hazards_Emergency_Overview_Text	A free-form summary explanation of the health, physical, and environmental hazards that require immediate attention in emergency situations involving the use of or exposure to the MATERIAL.
MATERIAL	Material_Identifier	A designator of exactly one MATERIAL.
MATERIAL	Material_Lot_Batch_Indicator	A character string that identifies all instances of the MATERIAL as having been created at the same time in the same way with the same component materials, therefore, having potentially identical characteristics that might vary from those of another such group.
MATERIAL	Material_Odor_Name	A commonly used term for the ODOR. Examples include fresh, pungent, acrid, fragrant, lemony, and like rotten eggs.
MATERIAL	Material_Producer_Supplied_Name	A commonly understood term for the MATERIAL, the term being provided by the creator of the MATERIAL.
MATERIAL	Material_Type_Name	A commonly understood term for a gross characterization of the MATERIAL. Known options are Object for a MATERIAL that is inherently limited in extent, essentially a kind of discrete item, and Substance for a MATERIAL that is not limited.
MATERIEL-ASSET	Materiel_Asset_Identifier	The designator that distinguishes one PROPERTY from another.
MATERIEL-ASSET	Materiel_Asset_Serial_Number	A number that is one of a series and is used for identification of a MATERIAL-

Entity Name	Attribute Name	Attribute Description
		ASSET, such as a machine, weapon, or motor vehicle.
MATERIEL-ASSET	Materiel_Asset_Unique_Identifier	A character string that identifies a unique instance of the recording of MATERIEL-ASSET.
MATERIEL-CATALOG-ITEM	Equipment_Specification_Unit_Of_Measure	The code that represents the units in which a value is being expressed, or manner in which a measurement has been taken for equipment. For example, HP for horsepower, BTU for British Thermal Unit, etc.
MATERIEL-CATALOG-ITEM	Materiel_Catalog_Item_Description_Text	A statement providing details about a MATERIEL-CATALOG-ITEM.
MATERIEL-CATALOG-ITEM	Materiel_Catalog_Item_Estimated_Useful_Life_Code	A code that determines the state of the estimated useful life of a MATERIEL item.
MATERIEL-CATALOG-ITEM	Materiel_Catalog_Item_Identifier	A character string that specifies a specific item that may be purchased or produced by DoD that is unique either by composition or by container.
MATERIEL-CATALOG-ITEM	Materiel_Catalog_Item_Manufacturer_Part_Number	The number assigned by the manufacturer to uniquely identify a MATERIEL-CATALOG-ITEM part.
MATERIEL-CATALOG-ITEM	Materiel_Catalog_Item_Specification_Text	A description of the condition of the materiel that should be met in order for it to be made available for use by the DoD.
MATERIEL-CATALOG-ITEM	Materiel_Catalog_Item_Unique_Identifier	An identifier that represents a Materiel Catalog Item that is tracked from a supplier.
MATERIEL-CATALOG-ITEM	Materiel_Catalog_Item_Unit_Cost_Amount	The unit cost of the catalog item.
MATERIEL-CATALOG-ITEM	Materiel_Catalog_Item_Unit_Of_Issue_Code	The code that represents the unit of measure utilized to designate the proper quantity such as: gallons, feet, and meters.
MATERIEL-CATALOG-ITEM	Property_Plant_Equipment_Indicator_Code	The code that signifies whether a MATERIEL-CATALOG-ITEM is a PROPERTY-PLANT-EQUIPMENT. This implies that the item shall be tracked and will have a DoD Global Identifier assigned to it.
MATERIEL-CATALOG-ITEM	Warranty_Type_Code	A code identifying the type of warranty. Values are Service, Repair, and Replacement.
MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD	Materiel_Catalog_Item_Material_Period_Start_Date	The first calendar day of the MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD.
MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD	Materiel_Catalog_Item_Material_Period_Stop_Date	The last calendar day of the MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD.
MATERIEL-ELEMENT-TYPE	Materiel_Element_Type	A character string that designates whether an ACQUISITION-ELEMENT is real property, materiel, a utility, a service element, or a financial element.
MATERIEL-ELEMENT-TYPE	Materiel_Element_Type_EPA_Designated_Product_Indicator	The Resource Conservation and Recovery Act (RCRA), Section 6002, and Executive Order 13101 require the purchase of Environmental Protection Agency (EPA) -designated products with a required minimum recovered

Entity Name	Attribute Name	Attribute Description
		material content as described in an agency's Affirmative Procurement Program (APP). This list of EPA-designated products is available at http://www.epa.gov/cpg. This requirement applies to all contracts that require EPA-designated products.
MATERIEL-ELEMENT-TYPE	National_Stock_Number	A number used to identify an item of material in the supply distribution system of the United States. Examples may include: National Stock Number for "Filter assembly, flu" is 2910-01-445-7771. A National Stock Number (NSN) consists of the Federal Supply Class (FSC) and a nine digit National Item Identification Number (NIIN).
MEDICAL-CONTROL	Medical_Control_Description_Text	The text detailing an explanation for the MEDICAL-CONTROL.
MEDICAL-CONTROL	Medical_Control_Name	The common identification or name used to identify a MEDICAL-CONTROL.
ORGANIZATION	Organization_Category_Code	A categorization of an ORGANIZATION by its mission, function, governmental-level, or other criteria.
ORGANIZATION	Organization_Description_Text	A narrative providing additional detail about the mission, type, function, and other characteristics about an ORGANIZATION.
ORGANIZATION	Organization_Identifier	A character string that identifies a public or private organizational entity that supports a given mission, function, business objective or other criteria.
ORGANIZATION	Organization_Name	The text that identifies a public or private organizational entity that supports a given mission, function, business objective or other criteria.
ORGANIZATION	Organization_Primary_Activity_Code	The code that represents the principal function of an ORGANIZATION.
ORGANIZATION	Organization_Primary_Industry_Category_Code	The code that represents a classification of the principal business area of an ORGANIZATION.
ORGANIZATION	Organization_Role_Type_Name	The common identification or name commonly used to refer to the classification for the type of an ORGANIZATION-ROLE.
ORGANIZATION	Organization_Tax_Identifier	The number assigned by the Internal Revenue Service establishing an account identifier created for revenue collection purposes.
ORGANIZATION-ROLE	Organization_Role_Category_Code	The common identification or name commonly used to refer to the classification for an ORGANIZATION-ROLE.
ORGANIZATION-ROLE	Organization_Role_Start_Date	The calendar day that the ORGANIZATION begins to perform a role relative to a function.
ORGANIZATION-ROLE	Organization_Role_Type_Identifier	A character string that specifies the ORGANIZATION-ROLE-TYPE.
PERMIT	Permit_Description_Text	The text that details an explanation for description for a PERMIT.
PERMIT	Permit_Identifier	A character string that uniquely identifies a PERMIT.
PERMIT	Permit_Number	An alphanumeric string assigned to the PERMIT by the authority that issued the PERMIT.
PERMIT	Permit_Restriction_Type_Name	The common identification or name that classifies the restrictions, limitations, constraints or other terms and conditions required by a PERMIT.

Entity Name	Attribute Name	Attribute Description
PERMIT	Permit_Start_Date	The calendar day a PERMIT begins or becomes active.
PERMIT	Permit_Stop_Date	The calendar day a PERMIT will become inactive or end.
PERMIT-CONTROL-TYPE	Permit_Control_Description_Text	The text detailing an explanation for a PERMIT-CONTROL-TYPE.
PERMIT-CONTROL-TYPE	Permit_Control_Type_Name	The common identification or name that classifies a PERMIT-CONTROL-TYPE.
PERMIT-SPECIFICATION	Permit_Specification_End_Date	The calendar day a PERMIT-SPECIFICATION ends or becomes inactive.
PERMIT-SPECIFICATION	Permit_Specification_Restriction_Limit_Quantity	The numeric value representing the restrictions, limitations, constraints or other terms and conditions required by a PERMIT-SPECIFICATION.
PERMIT-SPECIFICATION	Permit_Specification_Restriction_Limit_Unit_Of_Measure	The code that represents the units in which a value is being expressed for a permit restriction limit, or manner in which a measurement has been taken.
PERMIT-SPECIFICATION	Permit_Specification_Start_Date	The date a PERMIT-SPECIFICATION begins or becomes active.
PERMIT-SPECIFICATION	Permit_Specification_Text	A statement providing details about a PERMIT-SPECIFICATION.
PERMIT-SPECIFICATION	Permit_Specification_Type_Name	The common identification or name that classifies a PERMIT-SPECIFICATION.
PERSON	Person_Birth_Date_Time	The calendar day and time when a PERSON was born.
PERSON	Person_Current_Phone_Address_Phone_Number	A character string that designates one specific PERSON-CURRENT-PHONE ADDRESS.
PERSON	Person_Email_Address_Text	The name of a specific Person Email Account.
PERSON	Person_Identifier	The unique identifier for a person.
PERSON	Person_Name_Family_Name	The surname component of the PERSON-NAME. That is, the term commonly understood to refer the related PERSON or any one of his or her parents, children, and siblings. In Western civilization, the person's last name.
PERSON	Person_Name_Given_Name	The part of the PERSON-NAME that acts as the primary distinguisher of the related PERSON among others within that person's family that is, in Western civilization, the person's first name.
PERSON	Person_Name_Middle_Name	The part of the PERSON-NAME that acts as a secondary distinguisher among related PERSON's within the person's family having the same given name and family name.
PERSON	Person_Name_Prefix_Text	The part of the PERSON-NAME that precedes the Given Name, Middle Name and Family Name. It often acts as an indicator gender, marital status, (e.g., Mr. Miss, Mrs., Ms.) or academic or professional accomplishment (e.g., Dr., The Right Honorable, Judge, or Senator).
PERSON	Person_Name_Suffix_Text	The part of the PERSON-NAME that follows the Given Name, Middle Name and Family Name. It typically acts as a distinguisher of age among family

Entity Name	Attribute Name	Attribute Description
		members of the same name (e.g., Jr., Sr., III, etc.), in which case, it is a cadency name, or as an indicator of academic or professional accomplishment (e.g., PHD, DDS, CPA, or Esq.).
PERSONAL-PROTECTIVE-EQUIPMENT-CONTROL	Personal_Protective_Equipment_Control_Description_Text	A statement providing details about PERSONAL-PROTECTIVE-EQUIPMENT-CONTROL.
PERSONAL-PROTECTIVE-EQUIPMENT-CONTROL	Personal_Protective_Equipment_Control_Name	The common identification or name used to refer to a CONTROL on personal protective equipment.
PERSONAL-PROTECTIVE-EQUIPMENT-CONTROL	Personal_Protective_Equipment_Type_Name	The common identification or name used to refer to a type of personal protective equipment.
PERSON-CERTIFICATION	Person_Certification_End_Date	The calendar day for which the CERTIFICATION for a PERSON ends.
PERSON-CERTIFICATION	Person_Certification_Start_Date	The calendar day for which the CERTIFICATION for a PERSON begins.
PERSON-EXPOSURE	Person_Exposure_Dose_Quantity	The numeric value that represents the quantity of SUBSTANCE for which a PERSON is exposed.
PERSON-EXPOSURE	Person_Exposure_Dose_Unit_of_Measure	The scale that represents the units in which a value is being expressed for a dose.
PERSON-EXPOSURE	Person_Exposure_Duration_Quantity	The numeric value that represents a period of time for which a PERSON is exposed to a SUBSTANCE.
PERSON-EXPOSURE	Person_Exposure_Duration_Unit_of_Measure	The scale that represents the units in which a value is being expressed for a period of time.
PERSON-HEALTH-HISTORY	Person_Health_History_Calendar_Date	The date that a PERSON-HEALTH-HISTORY was reported.
PERSON-HEALTH-HISTORY	Person_Health_History_Description_Text	The text that describes a PERSON-HEALTH-HISTORY.
PERSON-HEALTH-HISTORY	Person_Health_History_Detection_Calendar_Date	The date that a PERSON-HEALTH-HISTORY was discovered.
PERSON-HEALTH-HISTORY	Person_Health_History_Identifier	A character string that identifies a unique instance of PERSON-HEALTH-HISTORY for the same related PERSON.
PERSON-HEALTH-HISTORY	Person_Health_History_Type_Code	The code that represents a kind of PERSON-HEALTH-HISTORY.
PERSON-	Instructional_Unit_identifier	The identifier that represents an INSTRUCTIONAL-UNIT.

Entity Name	Attribute Name	Attribute Description
INSTRUCTIONAL-UNIT		
PERSON-INSTRUCTIONAL-UNIT	Person_Instructional_Unit_Begin_Calendar_Date	The calendar date when a person-instructional-unit starts.
PERSON-INSTRUCTIONAL-UNIT	Person_Instructional_Unit_End_Calendar_Date	The calendar date when a person-instructional-unit stops.
PERSON-INSTRUCTIONAL-UNIT	Person_Instructional_Unit_Reason_Code	The code that represents the underlying basis of a person-instructional-unit.
PERSON-ORGANIZATION	Person_Organization_Role_Code	The symbol that stands for the role a PERSON plays in an ORGANIZATION.
PERSON-SHIFT	Person_Shift_End_Time	The moment a work period will end for a PERSON.
PERSON-SHIFT	Person_Shift_Start_Time	The moment a work period will begin for a PERSON.
PERSON-SKILL	Person_Skill_Start_Date	The calendar day on which a SKILL for a PERSON became active or was created.
PERSON-SKILL	Person_Skill_Stop_Date	The calendar day on which a SKILL for a PERSON ended.
PROPERTY	Property_Category_Code	The symbol that stands for a classification of a PROPERTY. An example categorization code is REAL-PROPERTY-ASSET.
PROPERTY	Property_Identifier	The designator that distinguishes one PROPERTY from another.
REAL-PROPERTY	Real_Property_Category_Code	A designation for categorizing the type of REAL-PROPERTY. Examples: REAL-PROPERTY-ASSET, REAL-PROPERTY-ASSET-MODULE.
REAL-PROPERTY	Real_Property_Description_Text	A statement providing details about the REAL-PROPERTY. The details may include descriptive information from the respective construction contract or legal/official instrument illustrating the basic characteristics of the REAL-PROPERTY.
REAL-PROPERTY	Real_Property_Identifier	The designator that distinguishes one REAL-PROPERTY from another.
REAL-PROPERTY	Real_Property_Name	The term commonly used to refer to the REAL-PROPERTY.
REAL-PROPERTY	Real_Property_Use_Type_Code	The symbol that stands for the type of REAL-PROPERTY-USE. Examples of the types of REAL-PROPERTY-USE that they represent are: Office building Office Storage room Airplane hanger Parking lot Airport runway
RELEASE-MEDIUM-TYPE	Release_Medium_Type_Description	The text that describes the RELEASE MEDIUM TYPE CODE.
RELEASE-MEDIUM-TYPE	Release_Medium_Type_Name	The code that stands for the type of environmental media (medium) into which a by-product is released. Examples may include: GW for Ground Water, SE for Sediment, SL for Soil, SW for Surface Water, and WE for Surface Water (Ecological).

Entity Name	Attribute Name	Attribute Description
RISK-ASSESSMENT	Risk_Assessment_Date	The calendar day for which an assessment was performed.
RISK-ASSESSMENT	Risk_Assessment_Description_Text	The text detailing an explanation for an RISK-ASSESSMENT.
RISK-ASSESSMENT	Risk_Assessment_Identifier	A character string that uniquely identifies an instance of an ASSESSMENT.
RISK-ASSESSMENT	Risk_Assessment_Probability_Level_Name	The character string that identifies the likelihood of a hazard resulting from an undesired event. For example, frequent, probable, occasional, remote, improbable.
RISK-ASSESSMENT	Risk_Assessment_Risk_Category_Name	The character string used to categorize a hazard. For example, high, serious, medium, low. The risk categorization is also used to determine risk acceptance authority, for example, hazards characterized as high requires acceptance by a component acquisition executive, serious requires acceptance by a program executive officer, medium and low requires acceptance by a program manager.
RISK-ASSESSMENT	Risk_Assessment_Severity_Category_Name	The character string that identifies the gravity of the consequences of an undesired event that could be caused by a specific hazard. For example, catastrophic, critical, marginal, negligible.
RISK-ASSESSMENT	Risk_Assessment_Type_Name	A character string that identifes, categorizes, or classifies an ASSESSMENT.
ROUTE-OF-EXPOSURE	Route_of_Exposure_Name	A commonly used term for the ROUTE-OF-EXPOSURE. Known values are Eye Contact, Skin Contact, Inhalation, and Ingestion .
SHIFT-TYPE	Shop_Shift_Type_Description_Text	The text that describes the SHOP SHIFT TYPE CODE.
SHOP	Shop_Alternate_Phone	A character string that designates the secondary phone address.
SHOP	Shop_Description_Text	The text that describes the SHOP.
SHOP	Shop_End_Date	The calendar day on which a SHOP became inactive or was closed.
SHOP	Shop_Identifier	The character string that distinguishes one shop from another.
SHOP	Shop_Mission_Statement	The text that describes the primary undertaking for a shop.
SHOP	Shop_Name	The term commonly used to refer to the activity that performs a task(s).
SHOP	Shop_Primary_Phone	A character string that designates the principal phone address.
SHOP	Shop_Start_Date	The calendar day on which a SHOP became active or was created.
SHOP-GROUP	Shop_Group_Description_Text	The text that describes a SHOP-GROUP.
SHOP-GROUP	Shop_Group_End_Date	The calendar day on which a SHOP-GROUP became inactive or ended.
SHOP-GROUP	Shop_Group_Identifier	The character string that distinguishes one shop group from another.
SHOP-GROUP	Shop_Group_Name	The term commonly used to refer to a SHOP-GROUP.
SHOP-GROUP	Shop_Group_Start_Date	The calendar day on which a SHOP-GROUP became active or was created.
SHOP-GROUP	Shop_Group_Function_Type_Name	The character string that identifies the purpose or function of the SHOP-GROUP.
SHOP-GROUP-SHOP	Shop_Group_Shop_Start_Date	The calendar day for which a SHOPs association to a SHOP-GROUP begins.
SHOP-GROUP-SHOP	Shop_Group_Shop_End_Date	The calendar day for which a SHOPs association to a SHOP-GROUP ends.
SHOP-SHIFT	Shop_Shift_End_Time	The moment a work period will end.
SHOP-SHIFT	Shop_Shift_Start_Time	The moment a work period will begin.
SHOP-SHIFT	Shop_Shift_Type_Name	The code that represents a defined working period for a shop. For example, 1st

Entity Name	Attribute Name	Attribute Description
		Shift, 2nd Shift, etc.
SIMILAR-EXPOSURE-GROUP	Similar_Exposure_Group_End_Date	The calendar day a SIMILAR-EXPOSURE-GROUP ends.
SIMILAR-EXPOSURE-GROUP	Similar_Exposure_Group_Name	A character string or term used to identify a SIMILAR-EXPOSURE-GROUP.
SIMILAR-EXPOSURE-GROUP	Similar_Exposure_Group_Start_Date	The calendar day a SIMILAR-EXPOSURE-GROUP begins.
SIMILAR-EXPOSURE-GROUP-PERSON	Similar_Exposure_Group_Person_End_Date	The calendar day a PERSON's association with a SIMILAR-EXPOSURE-GROUP ends.
SIMILAR-EXPOSURE-GROUP-PERSON	Similar_Exposure_Group_Person_Start_Date	The calendar day a PERSON's association with a SIMILAR-EXPOSURE-GROUP begins.
SKILL	Skill_Description_Text	The text used to describe a skill.
SKILL	Skill_Identifier	A character string that uniquely identifies a SKILL.
SKILL	Skill_Name	The name commonly used to identify a proficiency needed to perform a process.
SUBSTANCE	Substance_Clarity_Name	A commonly understood term or short description for the visual transparency of the SUBSTA NCE. Examples include Transparent, Translucent, Opaque, Clear, Cloudy, Slightly Cloudy, and Muddy.
SUBSTANCE	Substance_Color_Name	A commonly used term for the visual hue of the SUBSTANCE. Examples might be Blue, Red, Forest Green, Brick Brown, and Light Grey.
SUBSTANCE	Substance_Considered_Environmentally_Persistent_Indicator	A character string that identifies the relative tendency of the SUBSTANCE to remain substantially undegraded in the environment after being introduced there. Options are: Persistent if the SUBSTANCE tends to remain undegraded in the environment for months or years. Not Persistent if the SUBSTANCE tends to degrade or otherwise leave the environment within days or weeks.
SUBSTANCE	Substance_Gross_Structural_Type_Name	A commonly understood term for the macroscopic organization of the direct constituent(s) other than the physical state(s) of the constituent(s).
SUBSTANCE	Substance_Inert_Indicator	A character string that identifies whether the SUBSTANCE will undergo chemical change or transformation under typical conditions of storage, transportation, or use. Options are Inert (for a SUBSTANCE that will not undergo chemical change or transformation) and Reactive (for a SUBSTANCE that will undergo chemical change or transformation).
SUBSTANCE	Substance_Self_Reactive_Indicator	A character string that identifies whether 1) the SUBSTANCE may undergo intense condensation or decomposition reactions when exposed to increase in temperature, pressure, friction, or mechanical shock and 2) can cause a fire or

Entity Name	Attribute Name	Attribute Description
		explosion. Examples of self reactive SUBSTANCEs are nitroglycerine, picric acid, hydrogen peroxide solutions (91% by weight), many organize peroxides, and some epoxy compounds.
SUBSTANCE	Substance_Solid_Percent_By_Volume_ Quantity	The fractional amount of space occupied by that portion of the SUBSTANCE that will adhere to or become part of a solid object when the rest of the SUBSTANCE evaporates.
SUBSTANCE	Substance_Solid_Percent_By_Weight_ Quantity	The fraction of the mass of the SUBSTANCE that will adhere to or become part of a solid object when the rest of the SUBSTANCE evaporates.
SUBSTANCE	Substance_Stability_Normal_Conditions_ Text	A description of the normal conditions under which the SUBSTANCE's stability is determined. Typically, the description would include the relevant ambient temperature and pressure or the anticipated storage and handling conditions. For example, 70 degrees Fahrenheit (21 degrees Centigrade) and 14.7 psig (760 mm Hg) for something to be stored and handled at standard temperature and pressure.
SUBSTANCE	Substance_Stable_Indicator	A character string that identifies whether the SUBSTANCE remains unchanged or undergoes changes during storage or use under standard ambient temperature {70 degrees Fahrenheit (also 21 degrees Centigrade)} and pressure {14.7 psi (also 760 mm Hg)} or other anticipated storage and handling conditions.
SUBSTANCE	Substance_State_Complexity_Type_Name	A commonly understood term for the relevant the physical structure of the SUBSTANCE. One option is: Substance in One Physical State for a SUBSTANCE that is entirely a gas, liquid, solid, or plasma.
SUBSTANCE	Substance_Volatile_Organic_Compound_ Volume_Percent_Quantity	The fractional amount of space occupied by carbon-containing chemicals that evaporate readily at standard temperature and pressure, expressed in hundredths, when compared to a unit amount of space occupied by the relevant SUBSTANCE that contains those chemicals.
SUBSTANCE	Substance_Volatile_Organic_Compound_ Weight_Percent_Quantity	The fraction of the mass of carbon-containing chemicals that evaporate readily at standard temperature and pressure, expressed in hundredths, when compared to the mass of a unit amount of the relevant SUBSTANCE that contains those chemicals.
SUBSTANCE	Substance_Water_N_Octanol_Partition_ Coefficient_Quantity	The ratio of the solubility of the SUBSTANCE in water to its solubility in oil at 25 degrees Celsius.
UNIT-OF-MEASURE	Unit_Of_Measure_Code	The code that represents the units in which a value is being expressed, or manner in which a measurement has been taken.
UNIT-OF-MEASURE	Unit_Of_Measure_Description_Text	A statement providing details about the UNIT-OF-MEASURE.
UNIT-OF-MEASURE	Unit_Of_Measure_Name	The term commonly used to refer to the Unit of Measure. Used with Unit of Measure Code.

Appendix F: Hazardous Material Logical Data Model Integration Points into the BEA

Figure 13: PHD Logical Data Model View – BEA 4.0 Integration and Figure 14: HPA Logical Data Model View – BEA 4.0 Integration are the "integration views" of the hazardous materials logical data model currently being used by BEI and the BTA in integration workshops for BEA 4.0. They reflect the two major subsets of hazardous material data requirements: Product Hazard Data and Hazardous Process Authorization. The key "touch points" -- data entities that the Hazardous material data model uses, but does not own – are listed in Table 8.

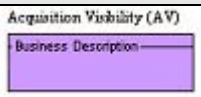
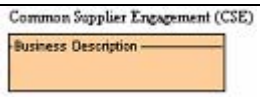
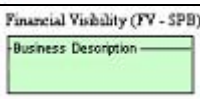
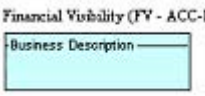
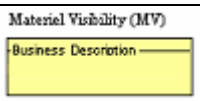
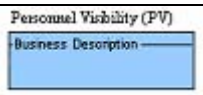
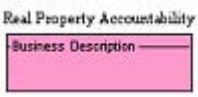
Table 8: Summary of BEA 4.0 Integration Touch Points (BEA OV-7 Entity Names) for Hazardous material OV-7 Data Requirements Listed by Business Enterprise Priority (BEP)

Real Property Accountability	Materiel Visibility	Common Supplier Engagement	Personnel Visibility
PROPERTY	MATERIEL ELEMENT TYPE	ACQUISITION ELEMENT TYPE	ORGANIZATION
PROPERTY ACTION	MATERIEL CATALOG ITEM	SUPPLIER MATERIEL CATALOG ITEM	ORGANIZATION IDENTIFICATION
PROPERTY ACQUISITION	MATERIEL CATALOG ITEM COMPONENT	SUPPLIER	ORGANIZATION IDENTIFICATION TYPE
REAL PROPERTY	MATERIEL ASSET	ORGANIZATION ROLE	PERSON
LOCATION			PERSON ORGANIZATION
			PERSON INSTRUCTIONAL UNIT
			PERSON SKILL
			PERSON CERTIFICATION
			PERSON HEALTH HISTORY
			INSTRUCTIONAL UNIT
			SKILL
			CERTIFICATION

TAB A: DoD Business Enterprise Architecture Color Codes by Business Enterprise Priority (BEP)

The color code corresponding to the business enterprise architecture (BEA) business enterprise priorities (BEPs) are in the table below. Within the data model views, these colors highlight those entities belonging to one of the BEA BEPs:

Table 9: Color codes representing information within BEA BEPs

BEA Business Enterprise Priority	Color	Example
Acquisition Visibility	Lavender	
Common Supplier Engagement	Light Orange	
Financial Visibility (Budget)	Light Green	
Financial Visibility (Non-Budget)	Light Aqua	
Material Visibility	Light Yellow	
Personnel Visibility	Light Blue	
Real Property Accountability	Light Rose	

TAB B: Hazmat Product Hazard Data Logical Data Model Integration into the BEA 4.0

The Business Enterprise Architecture (BEA) Integration View depicts the most fundamental data items, which are necessary for the product hazard data model, and identifies the primary links with the rest of the BEA to obtain the needed information. This BEA Integration View includes the relationship between the MATERIAL items and products that are purchased from vendor and supplier ORGANIZATIONs through either a local purchase or as MATERIAL CATALOG ITEMs. Although not specifically shown in this view, information on the ORGANIZATION's ADDRESS and points of contact, will be available in the PHD, including: Phone Number, Street Name, City, and State along with other data for the mailing address, as well as Geospatial Location.

Items purchased by DoD may contain OBJECTS that are comprised of OBJECT COMPONENTS (including kits containing kit components) and OBJECT COMPONENTS, will be comprised of SUBSTANCEs that have various physical and chemical properties and hazards that will be tracked by the model. Individual INGREDIENTS that comprise the SUBSTANCE will be tracked for certain regulatory characteristics and for the INGREDIENT PERCENTAGE as provided by the vendor or supplier.

While the actual data provided by the ORGANIZATION on a Material Safety Data Sheet (MSDS) will be contained in the various entities and attributes that make up the PHD, a picture representation of the pages of the MSDS will also be contained in the PHD as a DOCUMENT to allow the exact information provided with each MATERIAL to be relayed to on-site personnel in compliance with applicable safety and health regulations.

The BEA Integration View depicts the following entities:

ACQUISITION-ELEMENT-TYPE

CHEMICAL

CHEMICAL-COMPOUND

CHEMICAL-COMPOUND-ELEMENT

CHEMICAL-ELEMENT

COMBINATION-SUBSTANCE

DOCUMENT

INGREDIENT

INGREDIENT-PERCENTAGE

MATERIAL

MATERIAL-DOCUMENT

MATERIAL-MANUFACTURE-LOT

MATERIAL-MANUFACTURE-PERIOD

MATERIAL-MANUFACTURER

MATERIAL-MATERIEL-HAZMAT-TYPE

MATERIEL-ASSET

MATERIEL-CATALOG-ITEM

MATERIEL-CATALOG-ITEM-COMPONENT

MATERIEL-CATALOG-ITEM-MATERIAL-PERIOD

MATERIEL-ELEMENT-TYPE

MATERIEL-HAZMAT-TYPE

OBJECT

OBJECT-COMPONENT

ORGANIZATION

ORGANIZATION-IDENTIFICATION

ORGANIZATION-IDENTIFICATION-TYPE

ORGANIZATION-ROLE

SUBSTANCE

SUPPLIER

SUPPLIER-MATERIEL-CATALOG-ITEM

The BEA Integration View is closely related to the Material Components and Ingredients View of the PHD logical model, as discussed below.

Figure 13: PHD Logical Data Model View – BEA 4.0 Integration

Graphics placeholder – please see companion files for model view graphics.

Technical

There are 36 entities in the subject area diagram, RPA – Hazardous Process Authorization, that are unique to Environment, Safety, and Occupational Health (ESOH) for RP&ILM. Of these 36 entities, 16 exist in BEA 3.1. The RPA – Hazard Process Authorization subject area data view is new for BEA 4.0, and requires no foreign key, attribute or definition changes to the existing BEA entities.

The new entities are:

ADMINISTRATIVE-CONTROL

CONTROL

CONTROL-GUIDANCE

ENGINEERING-CONTROL

ESOH-ASPECT

HAZARDOUS-PROCESS

HAZARDOUS-PROCESS-ASPECT

HAZARDOUS-PROCESS-AUTHORIZATION-MATERIAL

HAZARDOUS-PROCESS-AUTHORIZATON

HAZARDOUS-PROCESS-AUTHORIZATON-CONTROL

HAZARDOUS-PROCESS-AUTHORIZATON-EQUIPMENT

HAZARDOUS-PROCESS-AUTHORIZATON-PERSON

HAZARDOUS-PROCESS-AUTHORIZATION-PROPERTY-OBJECT

HAZARDOUS-PROCESS-CONTROL

HAZARDOUS-PROCESS-EXECUTION

HAZARDOUS-PROCESS-EXECUTION-FEEDBACK

LOCATION-HAZARDOUS-PROCESS-AUTHORIZATION

PERSONAL-PROTECTIVE-EQUIPMENT-CONTROL

PERSON-CERTIFICATION

RISK-ASSESSMENT

Functional

The purpose of RPA – Hazardous Process Authorization is to provide the data requirements needed by DoD's Environment, Safety, and Occupational Health (ESOH) functional community to make a decision on the procurement, issuance, and control of hazardous materials used in hazardous processes (units of work) performed by the DoD. These data requirements were collaboratively identified and defined by subject matter experts from DoD Components and within the ESOH functional community, as well as strong representation from the logistics community. They lay the foundation to enhance installations lifecycle management to target sustainability and for hazards materials management from concept to disposal.

A hazardous process authorization begins when an organization tasked to perform work defines the need for a hazardous substance and submits the process authorization request. The request undergoes collaborative review in consultation with the process owner by individuals with expertise in specific environment, safety, and health areas. For example, the environment review will identify requirements that limit wastes and releases, mandate reporting for on-site chemical quantities, and control the disposal of byproducts. Similarly, occupational health experts will evaluate the request for applicable worker exposure limits and requirements for personal protective equipment. The result of the review may be an authorization of the organization's use of the hazardous substance subject to specific operating limitations, training requirements, or other controls designed to mitigate the hazards.

Definitions related to the process authorization include:

Hazardous Process – A kind of activity at the lowest identifiable level (unit of work providing a product or service) that has an ESOH requirement(s).

Hazardous Process Authorization – The process authorization is the formal permission (or denial of permission) to conduct an operational process (unit of work) under a specified set of terms and conditions. The process authorization output is the set of controls on an operational process work that pertain to people, process, equipment, location, materiel, and other factors that combine to execute the unit of work.

Hazardous Process Execution -- A specific instance of a process performed at some specific time.

The hazardous process authorization view exemplifies data required to answer the following questions.

What is the hazardous process?

What hazardous process is authorized?

What hazardous process is executed?

Who owns the hazardous process/

What property or kind of property is the hazardous process being performed on?

What are the risks and hazards assessments for the hazardous process?

What is the required equipment approved for a hazardous process by a hazardous process authorization?

What controls are required or mandated by a hazardous process authorization?

What people along with their skills, training, certifications, and medical history is associated with a hazardous process authorization?

What feedback is generated from hazardous process execution for continuous improvement?

What location is approved by a hazardous process authorization?

When is the hazardous process authorization?

When is the hazardous process executed?

What guidance is associated to the controls for a hazardous process and hazardous process authorization?

Figure 14: HPA Logical Data Model View – BEA 4.0 Integration

Graphics placeholder – please see companion files for model view graphics.

Appendix G: Data Elements Not Yet Included In the Logical Data Model

This appendix contains required data elements that are not in the model at this time due to time, resource, and scoping constraints. A future BPR will expand the model to incorporate these required data elements. The information sorted by data element name is in the following tables:

Table 10: PHD data elements not yet in the logical data model – Regulatory

Table 11: PHD data elements not yet in the logical data model – Fire Fighting Measures

Table 12: PHD data elements not yet in the logical data model – Transportation Information

TAB A: Product Hazard Data – Not Yet Incorporated into the PHD Logical Data Model - Regulatory

Table 10: PHD data elements not yet in the logical data model – Regulatory Information

Data Element Name	Data Element Definition	Section	Section Name
Chemical Hazardous Air Pollutant Quantity	The numeric value, in unit measure, for the amount of hazardous air pollutant in the ingredient.	15.1	Regulatory
Comprehensive Response Compensation and Liability Act Indicator	A code that denotes whether the hazardous chemical has reportability requirements under the Comprehensive Response Compensation and Liability Act (CERCLA). Examples: Yes/No.	15.1	Regulatory
Environmental Hazard Type Code	The code that identifies if the product is an environmental hazard. Examples: UK for Unknown; 1 for ODC; 2 for Toxic, 3 for Corrosive.	15.1	Regulatory
Environmental Hazard Type Name	The common identification or name that stands for the Environmental Hazard Type Code. Examples: UK for Unknown; 1 for ODC; 2 for Toxic, 3 for Corrosive.	15.1	Regulatory
Hazardous Air Pollutant Unit of Measure Code	The code that stands for the unit of measure code for measuring the amount of hazardous air pollutant in the ingredient or product. Examples: lb/gl, gm/liter	15.1	Regulatory
Product Hazardous Air Pollutant Quantity	The numeric value, in unit measure, for the amount of hazardous air pollutant in the product.	15.1	Regulatory
Product Total Inorganic Hazardous Air Pollutant Quantity	The numeric value, in unit measure, for the amount of inorganic hazardous air pollutant in the product.	15.1	Regulatory
Product Total Organic Hazardous Air Pollutant Quantity	The numeric value, in unit measure, for the total amount of organic hazardous air pollutants in the product.	15.1	Regulatory
Regulatory Information Jurisdiction Name	The common identification or name that stands for the jurisdiction, based on its type. Examples: Arizona for US State, Canada for Country, Fairfax County for County.	15.1	Regulatory
Regulatory Information Jurisdiction Type Name	The common identification or name that stands for the type of jurisdiction. Examples: Federal, US State, Country, County, etc.	15.1	Regulatory
Regulatory Information Text	A statement providing details about the jurisdictional (US State, Country, County, etc.) regulations that are specified at the ingredient level.	15.1	Regulatory
Regulatory Information Type Code	The code that stands for the type of regulation. Examples: CFR, CI (Command Instruction), SI (Service Instruction), etc.	15	Regulatory
Superfund Amendment Reauthorization Act Reportable 313 Ingredient Code	The code that stands for the chemical reportable under Section 313 of the Superfund Amendments and Reauthorization Act (SARA) 40 CFR 372.	15.1	Regulatory
Toxic Substance Control Act Indicator	A code that denotes whether the hazardous chemical has reportability requirements under the Toxic Substance Control Act TSCA). Examples: Yes/No.	15.1	Regulatory

TAB B: Product Hazard Data – Not Yet Incorporated into the PHD Logical Data Model – Fire Fighting Measures

Table 11: PHD data elements not yet in the logical data model – Fire Fighting Measures

Data Element Name	Data Element Definition	Section	Section Name
Autoignition Temperature	The numeric value for the temperature of the material, to which a material will ignite spontaneously or burn.	5.1	Fire-Fighting Measures
Fire and Explosion Hazard Description Text	A statement providing details about unusual fire and explosion hazards involving the material.	5.1	Fire-Fighting Measures
Fire Extinguishing Media Type Name	The common identification or name that stands for the fire fighting substance to be used to control a material in case of a fire. Examples: Fog, Chemical Foam, Water Spray, Carbon Dioxide, etc.	5.2	Fire-Fighting Measures
Fire Fighting Procedures Text	A statement providing details about special fire fighting procedures and instructions for fires involving the material.	5.3	Fire-Fighting Measures
Flash Point Temperature	The numeric value for the minimum temperature of the material, in unit measure, at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid.	5.1	Fire-Fighting Measures
Flash Point Temperature Method Name	The common identification or name that stands for the method used to determine the Flash Point Temperature. Examples: Cleveland Open Cup, Tagliabue Closed Cup, Pensky-Martens Closed Cup, and Setaflash Closed Cup.	5.1	Fire-Fighting Measures
Lower Explosive Limit Quantity	The numeric value for lowest percentage rate in air of the material at which it will produce a flash of fire when an ignition source is present. At concentrations lower, the mixture is too "lean" to burn.	5.1	Fire-Fighting Measures
NFPA Fire Hazard Rating Code	The code assigned by the National Fire Protection Association (NFPA) to the material that stands for the fire hazard level that might be encountered under fire or related emergency.	5	Fire-Fighting Measures
NFPA Health Hazard Rating Code	The code assigned by the National Fire Protection Association (NFPA) to the material that stands for the human health impacts that might be encountered under fire or related emergency.	5	Fire-Fighting Measures
NFPA Instability Hazard Rating Code	The code assigned by the National Fire Protection Association (NFPA) to the material that stands for the violent or uncontrolled reaction danger level that might be encountered under fire or related emergency.	5	Fire-Fighting Measures
NFPA Rating Text	A statement providing an explanation of the hazard level associated with a NFPA rating code for the material under conditions of fire or related emergency. Examples: "Normally stable, even under fire exposure conditions, and are not reactive with water."	5	Fire-Fighting Measures
NFPA Special Hazards Rating Code	The code assigned by the National Fire Protection Association (NFPA) to the material that stands for the types of reaction or other hazards that might be encountered under fire or related emergency. For example, materials that react violently with water or are radioactive require special fire and emergency response techniques.	5	Fire-Fighting Measures
Protective Equipment and Precautions for	A statement providing details about the personal protective equipment required for	5.3	Fire-Fighting Measures

Data Element Name	Data Element Definition	Section	Section Name
Firefighters Text	firefighters for fires involving the chemical. Examples: "As in any fire, firefighters should wear NIOSH-approved or equivalent Self-Contained Breathing Apparatus and full protective gear."		
Specific Hazards Arising From the Chemical Text	A statement providing details about hazards that may arise from the chemical in case of fire. Examples: "After the water evaporates, the remaining material may burn. Irritating or highly toxic gases may be generated by combustion, including carbon monoxide (CO), carbon dioxide (CO2), disodium oxide (Na2O) and nitrogen oxides."	5.3	Fire-Fighting Measures
Temperature Unit of Measure Code	The code that stands for the unit of measure code for measuring temperature. Examples: Celsius, Fahrenheit, etc.	5.1	Fire-Fighting Measures
Upper Explosive Limit Quantity	The numeric value for highest percentage rate in air of the material at which it will produce a flash of fire when an ignition source is present. At higher concentrations, the mixture is too "rich" to burn.	5.1	Fire-Fighting Measures

TAB C: Product Hazard Data – Not Yet Incorporated into the PHD Logical Data Model – Transportation Information

Table 12: PHD data elements not yet in the logical data model – Transportation Information

Data Element Name	Data Element Definition	Section	Section Name
Additional Properties and Observations Code	See: Stowage Provisions Code	14	Transport Information
ADR Tank Code	A code that stands for the applicable sections for portable tank requirements, based on the corresponding ADR regulatory document. This tank type corresponds to the least stringent tank provisions that are acceptable for the carriage of the relevant substance in ADR tanks.	14	Transport Information
ADR Tank Special Provisions Code	The alphanumeric code(s) that stands for the codes (rules, principles, or laws) of the special provisions applicable to ADR tanks that have additionally to be met.	14	Transport Information
ADR Transport Category Code	A code that stands for the transport category to which the substance or article is assigned for the purposes of exemption related to quantities carried per transport unit.	14	Transport Information
ADR Vehicle Type Code	A code that stands for the vehicle normally used for the carriage of dangerous or hazardous goods. Examples: Class 1 – Explosives; Class 4.2 – Spontaneously combustible; Class 7 – Radioactive.	14	Transport Information
Article Indicator	A designation of whether the item is an Article as defined in the Hazard Communication Standard. Example: Yes/No.	1	Product and Company Information
Cargo Aircraft Only Package Size Maximum Quantity	The maximum net quantity, in liters or kilograms, that may be offered for transportation in one package by cargo aircraft only.	14	Transport Information
Cargo Aircraft Only Packaging Instructions Paragraph Number	The designator used to identify the applicable sections for basic packaging requirements, based on the corresponding regulatory document for cargo aircraft only.	14	Transport Information
Certificate of Equivalency Approval Number	The designator assigned to a Certificate of Equivalency (COE) approval stating the proposed packaging for shipment of HAZMAT will either equal or exceed the requirements of Title 49 CFR, Parts 105-180.f, if the prescribed procedures are followed. Within DoD it is referred to as a Certification Control Number (CCN). (49 CFR.173.7(a)). Examples: NA-97-505A	14	Transport Information
Class Code	See: Hazard Class Code	14	Transport Information
Competent Authority Approval Date	The calendar date of the Competent Authority Approval (CAA).	14	Transport Information
Competent Authority Approval for Explosives Classification Number	The designator assigned to a written approval (CAA) stating the competent authority has reviewed the explosive (EX) hazard classification; that it meets the UN standards; and that it is approved for transportation. Examples: EX-9705090, or 1997050090.	14	Transport Information
Competent Authority Approval for Packaging Number	The designator assigned to a written approval (CAA) stating the competent authority has reviewed the package design; that it meets the UN standards; and that it is approved for transportation. Examples: CA-9803003 or 1998030003.	14	Transport Information
Competent Authority Name	The standard identification or name of the competent authority that reviewed the explosive or explosive device classification or packaging.	14	Transport Information
DOT Reportable Quantity	The net quantity of a substance per inner package that triggers labeling, packaging and other requirements related to shipping such substances.	14	Transport Information
DOT Special Approval Number	The designator assigned to a Department of Transportation Special Approval (SA).	14	Transport Information

Data Element Name	Data Element Definition	Section	Section Name
DOT Special Permit Number	A designator granted by the DOT to deviate from the requirements of 49 CFR, 100-199, based on proof that an equivalent level of safety is provided by the deviation; applicable to domestic shipments only.	14	Transport Information
Emergency Response Guidebook Guide Number	A three-digit designator used to help first responders to quickly identify a specific or generic hazards of a material involved in an incident and protecting themselves and the general public. Examples: 121 for Gases-Inert, 125 for Gases-Corrosive, and 159 for Substances (Irritating).	14	Transport Information
Emergency Response Guidebook Year	The four-digit year corresponding to the reissue date of the Emergency Response Guidebook (ERG) as printed on the document. Examples: 2004.	14	Transport Information
EmS Number	The designator used identify the emergency response procedures for ships that carry dangerous goods.	14	Transport Information
Hazard Class Code	A numerical identification which describes the category of primary hazard (class or division) assigned to a hazardous material. Examples: Class 3 - Flammable liquids, Class 8 - Corrosive materials, Division 4.1 - Flammable solids, Division 4.2 - Spontaneously combustible materials.	14	Transport Information
Hazard Label Code	The code(s) which represent the hazard warning label required for a package filled with a material conforming to the associated hazard class and proper shipping name, unless the package is otherwise excepted from labeling by a provision. Examples: 1 for Explosive, 2.1 for Flammable Gas, and 7 for Radioactive.	14	Transport Information
Hazardous Identification Number	An alphanumeric code assigned to a material according to ADR and displayed on some intermodal containers. Examples: X338 for Highly flammable liquid, corrosive, which reacts dangerously with water.	14	Transport Information
Hazardous Material Symbol Code	The code or symbol that identifies regulatory peculiarity for proper shipping name. Examples: "+", "A", "D", "G", "I", "W", "star", "†", "p", "pp", and "•".	14	Transport Information
Hazardous Substance Name	The standard identification or name of a substance or material, including its ingredients and solutions, that the Transportation authority has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has designated as hazardous under applicable hazardous materials transportation law.	14	Transport Information
Intermediate Bulk Containers Special Provisions Code	The alphanumeric code(s) that specifies codes (rules, principles or laws) for special provisions applicable to intermediate bulk packing of hazardous materials.	14	Transport Information
Magnetism Quantity	The numeric value that stands for the strength of the magnetic field at the source of the material. Unit of Measure is in milligauss.	14	Transport Information
Mixed Packing Provisions Code	The alphanumeric code(s) that specifies codes (rules, principles or laws) for special provisions applicable to mixed packing of hazardous materials.	14	Transport Information
Mode of Transportation	The type of transportation used for moving a shipment from one place (origin) to another (destination). Examples: Highway, Railroad, Air, Water.	14	Transport Information
Net Explosive Weight Quantity	The numeric value that stands for the sum of the weights of the high explosive, propellant explosive and pyrotechnic compositions contained in each of the explosive components that make up a complete round of ammunition. The net explosive weight (NEW) is expressed in pounds or kilograms.	14	Transport Information
Package Size Maximum Quantity	The maximum net quantity, in liters or kilograms, that may be offered for transportation in	14	Transport Information

Data Element Name	Data Element Definition	Section	Section Name
	one package by an applicable mode of transport.		
Package Unit of Measure Code	The Unit of Measure code used for measurement of the quantity associated with the package transported by an applicable mode of transport. Examples: l, kg	14	Transport Information
Packaging Bulk Instructions Paragraph Number	The designator used to identify the applicable sections for bulk packaging requirements, based on the corresponding modal regulatory document.	14	Transport Information
Packaging Exceptions Instructions Paragraph Number	The designator used to identify the applicable sections for exceptions from packaging requirements, based on the corresponding modal regulatory document.	14	Transport Information
Packaging Instructions Paragraph Number	The designator used to identify the applicable sections for the basic packaging requirements, based on the corresponding modal regulatory document.	14	Transport Information
Packaging Instructions Type Name	The standard identification or name for the type of packaging instruction applicable to a hazardous material.	14	Transport Information
Packaging Intermediate Bulk Instructions Paragraph Number	The designator used identify the applicable sections for intermediate bulk packaging requirements, based on the corresponding modal regulatory document.	14	Transport Information
Packaging Non Bulk Instructions Paragraph Number	The designator used to identify the applicable sections for non-bulk packaging requirements, based on the corresponding modal regulatory document.	14	Transport Information
Packing Group Code	The code that stands for the classification according to the degree of danger presented by hazardous materials. Examples: Packing Group I indicates great danger; Packing Group II, medium danger; and Packing Group III, minor danger.	14	Transport Information
Packing Provisions Code	The alphanumeric code(s) that specifies codes (rules, principles or laws) for special provisions applicable to packaging a hazardous material.	14	Transport Information
Passenger and Cargo Aircraft Package Size Maximum Quantity	The maximum net quantity, in liters or kilograms, that may be offered for transportation in one package by an applicable mode of transport.	14	Transport Information
Passenger and Cargo Aircraft Packaging Instructions Paragraph Number	The designator used to identify the applicable sections for packaging requirements, for transportation by passenger-carrying aircraft or by cargo aircraft only.	14	Transport Information
Portable Tanks and Bulk Containers IMO Tank Instructions Paragraph Number	The designator used to identify the applicable sections for portable tank and bulk container requirements, based on the corresponding IMO regulatory document.	14	Transport Information
Portable Tanks and Bulk Containers Special Provisions Code	The alphanumeric code(s) that specifies codes (rules, principles or laws) for special provisions applicable to portable tanks and bulk containers for hazardous materials.	14	Transport Information
Portable Tanks and Bulk Containers UN Tank Instructions Paragraph Number	The designator used identify the applicable sections for portable tank and bulk container requirements, based on the corresponding UN regulatory document.	14	Transport Information
Proper Shipping Name	The standard identification or name prescribed by the transportation regulatory organization for the shipment of the hazardous material. Examples: Acetal, Acetone, Acetic anhydride.	14	Transport Information
Special Provision Type Name	The standard identification or name for the type of special provision applicable to packaging a hazardous material.	14	Transport Information
Special Provisions Code	The alphanumeric code(s) that stands for the codes (rules, principles, policy or laws) for special provisions describing a packaging exception for a prescribed packaging for a hazardous material. Examples: For "Packaging Provisions" - "IP1" for "IBCs must be packed in closed freight containers or a closed transport vehicle."	14	Transport Information
Special Provisions for Bulk Carriage Code	The alphanumeric code(s) that stands for the codes (rules, principles or laws) of the applicable special provisions (if any) for carriage in bulk.	14	Transport Information
Special Provisions for Carriage Loading,	The alphanumeric code(s) that stands for the codes (rules, principles or laws) of the	14	Transport Information

Data Element Name	Data Element Definition	Section	Section Name
Unloading and Handling Code	applicable special provisions for loading, unloading and handling.		
Special Provisions for Carriage Operation Code	The alphanumeric code(s) that stands for the codes (rules, principles or laws) of the applicable special provisions for operation.	14	Transport Information
Special Provisions for Package Carriage Code	The alphanumeric code(s) that stands for the codes (rules, principles or laws) of the applicable special provisions (if any) for carriage in packages.	14	Transport Information
Subsidiary Hazard Code	The code(s) that stand for a hazard of material other than the primary hazard requiring further consideration.	14	Transport Information
Tentative Class Code	A numerical identification assigned to a hazardous material, when the category of primary hazard (class or division) of a substance is uncertain and it is being carried for further testing.	14	Transport Information
Transportation Regulatory Authority Code	A code that stands for the transportation authority. Examples: IATA for International Air Transport Association, AFMAN for United States Air Force Joint Manual, IMDG for International Maritime Dangerous Goods, ADR for European Agreement concerning the Int'l Carriage of Dangerous Goods by Road.	14	Transport Information
Transportation Regulatory Authority Name	The standard identification or name of the transportation authority. Examples: International Air Transport Association (IATA), United States Air Force (AFMAN), International Maritime Dangerous Goods (IMDG), European Agreement concerning the Int'l Carriage of Dangerous Goods by Road (ADR).	14	Transport Information
Transportation Vehicle Type Name	The common identification or name used to refer to the type of vehicle used for transporting the dangerous goods. Examples: Passenger-carrying aircraft, Cargo aircraft, Passenger vessel, Cargo vessel, Passenger-carrying rail car.	14	Transport Information
United Nations / North American Identification Number	The identification number assigned to each Proper Shipping Name (PSN), prefixed either by "UN" (United Nations) or "NA" (North American). Examples: UN1088 for Acetal, UN1090 for Acetone.	14	Transport Information
Vessel Stowage and Segregation Code	See: Vessel Stowage Location Code	14	Transport Information
Vessel Stowage Location Code	The code that represents the authorized stowage locations on board an applicable mode of transport. Examples: "A" for "on deck" or "under deck" on a cargo vessel and on a passenger vessel, "C" for "on deck only" on a cargo vessel and on a passenger vessel."	14	Transport Information
Vessel Stowage Provisions Code	The code that represents the other provisions for vessel stowage requirements for specific hazardous materials.	14	Transport Information