

PHD for Substance Names, Families, and Other Groupings (OV-07)
 Logical Data Model (Subject Area)
 System Architect
 Rev: Jan 18, 2006, 15:56
 Comment:
 This diagram depicts several major ways to group SUBSTANCES because of how they are named, exhibit similar physical properties, react similarly under similar conditions, or have been established as a group by law, regulation, organizational fiat, or historical usage. It also depicts some ways that SUBSTANCES and groups of SUBSTANCES interact with each other.

INGREDIENT-PERCENTAGE
 Ingredient_Container_Substance_Identifier (FK)
 Ingredient_Container_Substance_Identifier (FK)
 Ingredient_Percentage_Measurement_Type_Name
 Ingredient_Percentage_Type_Name
 Ingredient_Percentage_Quantity
 Business Description —
 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 0.9% by weight.
 Note 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 up 40% of the same SUBSTANCE, and Carbon-14 may make up 3% of the SUBSTANCE.

INGREDIENT
 Ingredient_Container_Substance_Identifier (FK)
 Ingredient_Container_Substance_Identifier (FK)
 Ingredient_Considered_De_Minimus_Indicator
 Ingredient_Considered_EPCRA_Hazardous_Indicator
 Ingredient_Considered_Insoluble_Indicator
 Ingredient_Is_Stabilizer_Indicator
 Ingredient_Non_Numerical_Percent_Text
 Ingredient_Non_Numerical_Percent_Calculation_Text
 Business Description —
 A SUBSTANCE that is a direct constituent of another SUBSTANCE.
 For example, SUBSTANCE water is an INGREDIENT of SUBSTANCE 99% 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.

SUBSTANCE
 Substance_Identifier (FK)
 Substance_Identifier (FK)
 Substance_State_Complexity_Type_Name
 Substance_Clearly_Named
 Substance_Color_Name
 Substance_Considered_Environmentally_Persistent_Indicator
 Substance_Inst_Indicator
 Substance_Group_Structural_Type_Name
 Substance_Radiation_Dose_Rate
 Substance_Radiation_Dose_Rate_Link_Of_Measure_Identifier (FK)
 Substance_Self_Heating_Indicator
 Substance_Solid_Percent_By_Volume_Quantity
 Substance_Solid_Percent_By_Weight_Quantity
 Substance_Stability_Indicator
 Substance_Stability_Normal_Conditions_Text
 Substance_Volatile_Organic_Compound_Volume_Percent_Quantity
 Substance_Volatile_Organic_Compound_Volume_Non_Numerical_Quantity_Text
 Substance_Volatile_Organic_Compound_Weight_Percent_Quantity
 Substance_Volatile_Organic_Compound_Weight_Non_Numerical_Quantity_Text
 Substance_Water_N_Octanol_Partition_Coefficient_Quantity
 Business Description —
 A MATERIAL having no inherent limit in extent; therefore without size or shape. E.g., green paint, hydrochloric acid, styro foam, or cake syrup.

CHEMICAL
 Chemical_Identifier (FK)
 Chemical_Type_Name
 Business Description —
 A macroscopically homogeneous SUBSTANCE that exists as such regardless of its physical state.
 Examples are gasoline, the secret ingredient in a popular soft drink, and depleted uranium slurry.

INGREDIENT-PERCENTAGE-TRADE-SECRET
 Ingredient_Container_Substance_Identifier (FK)
 Ingredient_Container_Substance_Identifier (FK)
 Trade_Secret_Administration_Organization_Identifier (FK)
 Trade_Secret_Number (FK)
 Business Description —
 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
 Ingredient_Container_Substance_Identifier (FK)
 Ingredient_Container_Substance_Identifier (FK)
 Trade_Secret_Administration_Organization_Identifier (FK)
 Trade_Secret_Number (FK)
 Ingredient_Trade_Secret_Confidential_Ingredient_Inventory_Number
 Business Description —
 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.

SUBSTANCE-TRADE-SECRET
 Substance_Identifier (FK)
 Trade_Secret_Administration_Organization_Identifier (FK)
 Trade_Secret_Number (FK)
 Substance_Trade_Secret_Confidential_Substance_Inventory_Number
 Substance_Trade_Secret_Substance_Generic_Description_Text
 Business Description —
 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.

TRADE-SECRET
 Trade_Secret_Administration_Organization_Identifier (FK)
 Trade_Secret_Unique_Identifier (FK)
 Trade_Secret_Number
 Trade_Secret_Registrating_Organization_Identifier (FK)
 Trade_Secret_Unique_Identifier (FK)
 Trade_Secret_Start_Date
 Trade_Secret_Stop_Date
 Business Description —
 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.

SUBSTANCE-INCOMPATIBLE-SUBSTANCE
 Substance_Incompatible_Substance_First_Substance_Identifier (FK)
 Substance_Incompatible_Substance_Second_Substance_Identifier (FK)
 Substance_Incompatible_Substance_Possible_Result_Details_Text
 Substance_Incompatible_Substance_Possible_Result_Summary_Text
 Business Description —
 A set of two SUBSTANCES that can react together to produce a hazardous situation.

SUBSTANCE-INCOMPATIBLE-SUBSTANCE-FAMILY
 Substance_Incompatible_Substance_Family_First_Substance_Identifier (FK)
 Substance_Incompatible_Substance_Family_Second_Substance_Identifier (FK)
 Substance_Incompatible_Substance_Family_Possible_Result_Details_Text
 Substance_Incompatible_Substance_Family_Possible_Result_Summary_Text
 Business Description —
 A set of two SUBSTANCE-FAMILIES such that SUBSTANCE within one SUBSTANCE-FAMILY can react with any SUBSTANCE within the other SUBSTANCE-FAMILY to produce a hazardous situation.

SUBSTANCE-FAMILY-INCOMPATIBLE-SUBSTANCE-FAMILY
 Substance_Family_Incompatible_Substance_Family_First_Substance_Identifier (FK)
 Substance_Family_Incompatible_Substance_Family_Second_Substance_Identifier (FK)
 Substance_Family_Incompatible_Substance_Family_Possible_Result_Details_Text
 Substance_Family_Incompatible_Substance_Family_Possible_Result_Summary_Text
 Business Description —
 A set of two SUBSTANCE-FAMILIES such that SUBSTANCE within one SUBSTANCE-FAMILY can react with any SUBSTANCE within the other SUBSTANCE-FAMILY to produce a hazardous situation.

INGREDIENT-TRADE-SECRET-SUBSTANCE-NAME
 Ingredient_Container_Substance_Identifier (FK)
 Ingredient_Container_Substance_Identifier (FK)
 Trade_Secret_Administration_Organization_Identifier (FK)
 Trade_Secret_Number (FK)
 Substance_Synonym_Identifier (FK)
 Business Description —
 A SUBSTANCE-SYNONYM used to identify a SUBSTANCE whose use as an INGREDIENT is identified as proprietary in the relevant TRADE-SECRET.

SUBSTANCE-TRADE-SECRET-SUBSTANCE-NAME
 Substance_Identifier (FK)
 Trade_Secret_Administration_Organization_Identifier (FK)
 Trade_Secret_Number (FK)
 Substance_Synonym_Identifier (FK)
 Business Description —
 A SUBSTANCE-SYNONYM used to identify a SUBSTANCE whose existence is, itself, proprietary, as identified in the relevant TRADE-SECRET.

SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP
 Substance_Family_Identifier (FK)
 Substance_Identifier (FK)
 Substance_Identifier (FK)
 Substance_Family_Substance_Membership_Include_Exclude_Indicator
 Substance_Family_Substance_Membership_Rationale_Text
 Substance_Family_Substance_Membership_Start_Date
 Substance_Family_Substance_Membership_Stop_Date
 Business Description —
 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 it is a separate instance of SUBSTANCE-FAMILY-SUBSTANCE-MEMBERSHIP that 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-FAMILY
 Substance_Family_Identifier (FK)
 Substance_Family_Start_Date
 Substance_Family_Stop_Date
 Substance_Family_Type_Name
 Substance_Family_Name
 Business Description —
 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.
 An inclusion or exclusion of a SUBSTANCE-FAMILY inside another SUBSTANCE-FAMILY.

SUBSTANCE-FAMILY-SUBSTANCE-FAMILY-MEMBERSHIP
 Substance_Family_Identifier (FK)
 Substance_Family_Identifier (FK)
 Substance_Family_Identifier (FK)
 Substance_Family_Substance_Family_Membership_Include_Exclude_Indicator
 Substance_Family_Substance_Family_Membership_Rationale_Text
 Substance_Family_Substance_Family_Membership_Start_Date
 Substance_Family_Substance_Family_Membership_Stop_Date
 Business Description —
 An inclusion or exclusion of a SUBSTANCE-FAMILY inside another SUBSTANCE-FAMILY. 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-REGULATION-REQUIREMENT
 Substance_Identifier (FK)
 Regulation_Identifier (FK)
 Regulation_Requirement_Start_Date (FK)
 Substance_Regulation_Requirement_Reporting_Code
 Substance_Regulation_Requirement_Start_Date
 Substance_Regulation_Requirement_Stop_Date
 Business Description —
 A REGULATION-established responsibility that governs the tracking or use of the related SUBSTANCE.

SUBSTANCE-FAMILY-REGULATION-REQUIREMENT
 Substance_Family_Identifier (FK)
 Regulation_Identifier (FK)
 Regulation_Requirement_Start_Date (FK)
 Substance_Family_Regulation_Requirement_Reporting_Code
 Substance_Family_Regulation_Requirement_Start_Date
 Substance_Family_Regulation_Requirement_Stop_Date
 Business Description —
 A REGULATION-established responsibility that governs the tracking or use of SUBSTANCES in the related SUBSTANCE-FAMILY.

REGULATION-REQUIREMENT
 Regulation_Identifier (FK)
 Regulation_Requirement_Start_Date
 Regulation_Requirement_De_Minimus_Weight_Percent_Quantity
 Regulation_Requirement_Line_Weight_Quantity
 Regulation_Requirement_Line_Weight_Unit_Of_Measure_Identifier (FK)
 Regulation_Requirement_Physical_Form_Text
 Regulation_Requirement_Discussion_Text
 Business Description —
 A REGULATION-established responsibility that governs the tracking or use of one or more SUBSTANCES or groups of SUBSTANCES.

SUBSTANCE-MATCHING-SYNONYM
 Substance_Identifier (FK)
 Substance_Synonym_Identifier (FK)
 Substance_Matching_Synonym_Start_Date
 Substance_Matching_Synonym_Stop_Date
 Substance_Matching_Synonym_Usage_Type_Name
 Business Description —
 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 ketone, heptane, 4-methyl-2-pentanone, isobutyl methyl ketone, isopropylacetone, MIBK, and MIBK are all terms that refer to the same substance.

SUBSTANCE-SYNONYM
 Substance_Synonym_Identifier
 Substance_Synonym_Image
 Substance_Synonym_Promulgation_Type_Name
 Substance_Synonym_Text
 Substance_Synonym_Structure_Type_Name
 Business Description —
 A name or other character string that can be used to designate a SUBSTANCE.

ORGANIZATION-SUBSTANCE-FAMILY
 Substance_Synonym_Promulgating_Organization_Identifier (FK)
 Organization_Unique_Identifier (FK)
 Business Description —
 A SUBSTANCE-SYNONYM established by a specific ORGANIZATION.

ORGANIZATION
 Organization_Unique_Identifier
 Organization_Name
 Organization_Description_Text
 Organization_Category_Code
 Organization_Primary_Industry_Category_Code
 Organization_Primary_Activity_Code
 Organization_Electronic_Fund_Transfer_Account_Number
 Organization_Tax_Identifier
 Organization_Classification_Code
 Organization_Duration_Type_Code
 Organization_DUNS_Number
 Business Description —
 An administrative structure with a mission.

REGULATION-SUBSTANCE-SYNONYM
 Substance_Synonym_Identifier (FK)
 Substance_Synonym_Promulgating_Regulation_Identifier (FK)
 Regulation_Identifier (FK)
 Business Description —
 A SUBSTANCE-SYNONYM established by a specific REGULATION.

REGULATION
 Regulation_Identifier
 Regulation_Promulgating_Organization_Identifier (FK)
 Regulation_Name
 Regulation_CFR_Citation_Identifier
 Regulation_Start_Date
 Regulation_Stop_Date
 Business Description —
 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 4800.0-B, "Defense Transportation Regulation," contains the mandatory

ORGANIZATION-SUBSTANCE-FAMILY
 Substance_Synonym_Identifier (FK)
 Organization_Unique_Identifier (FK)
 Business Description —
 A SUBSTANCE-FAMILY that is made by an ORGANIZATION.

REGULATION-SUBSTANCE-FAMILY
 Substance_Family_Identifier (FK)
 Regulation_Identifier (FK)
 Business Description —
 A SUBSTANCE-FAMILY that is established by a REGULATION.

Product Hazard Data for Substance Names, Families, and Other Groupings

