

# Hazardous Substance and Emergency Event Surveillance

## HSEES Chemical-Category Definitions

**Acids:** Substances that are of concern due to acidity.

**Ammonia:** Ammonia and closely-related substances that readily produce it.

**Bases:** Substances that are of concern due to basicity.

**Chlorine:** Chlorine and closely-related substances that readily produce it.

**Formulations:** Formulations, brand-name products, waste-stream products, and transportation codes for which the substance(s) of health concern are not known. (If it was known, it would be entered into some other, appropriate category.)

**Hetero-Organics:** Organic compounds with nitrogen, sulfur, or phosphorous that do not fall into other, more-precise categories.

**Hydrocarbons:** Alkyl and aromatic hydrocarbons, coal tars, creosote, etc. Note that petroleum products, per se, are not collected into HSEES due to the Petroleum Exclusion clause of CERCLA.

**Inorganics:** Inorganic substances (substances without carbon, such as metals).

**Other:** Substances that do not fit into any other category. Also includes radioactive substances and substances whose primary purpose is pharmaceutical or biological.

**Oxy-Organics:** Organic compounds with oxygen that do not fall into other, more-precise categories.

**Paints and Dyes:** Paint or dye compounds and formulations.

**Pesticides/Agricultural:** Pesticides, herbicides, fungicides, etc., as well as agricultural compounds such as fertilizer.

**Polychlorinated Biphenyls:** Polychlorinated biphenyls.

**Polymers:** Polymers, plastics, resins and related compounds.

**Volatile Organic Compounds:** Volatile (rapidly vaporizing) organic (carbon containing) compounds.

**Mixtures:** A combination of 2 or more chemical substances that have different chemical categories.

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## HSEES Chemical-Category Supplementary Information

A number of compounds qualify for more than one chemical classification. In order to simplify the analysis and presentation of this information, only the category most relevant to HSEES is used. Relevance is defined and assigned in a hierarchical manner, as follows: 1) immediately hazardous, 2) by intended usage, 3) chemical structure (from more precise to less precise categories), 4) Formulations, and 5) Other. Pharmaceutical/biological and radioactive compounds are an exception; these always go in AOther@, even if they fit other categories.

### **Hierarchy for chemical category assignment:**

*Categories on the same line are on the same level of the hierarchy tree; in other words, there generally is no hierarchy choice to be made between them.*

**Ammonia / Chlorine / Acids / Bases**

**Pesticides/Agricultural / Paints and Dyes**

**Volatile Organic Compounds / Polychlorinated Biphenyls  
Polymers / Hydrocarbons / Inorganics**

**Hetero-Organics / Oxy-Organics**

For organic compounds with both oxygen and hetero adducts, choose the predominant chemically-active one. If the relative activities are not known for a mixed hetero/organic compound, choose oxy-organic.

**Formulations**

**Other**

### **Examples:**

*Example 1:* An inorganic arsenical that is often used as a pesticide would be assigned to the pesticide category (intended usage precedes chemical structure). (If it is not known that an arsenical is a pesticide, inorganic would be used.)

*Example 2:* A highly volatile monomer that is commonly used in producing polymers: Choose VOC, since VOCs are of higher health concern than polymers, per se.

*Example 3:* A transportation code for a waste-stream product that is known to contain chromium: Choose Ainorganic@. Only use Formulations when no information is available that would allow one to choose categories higher in the hierarchy.

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## Further notes on the categories:

1) **Organic acids** should go in the AAcids@ category. Likewise, AAcids@ is appropriate for weak acids (i.e., acids that are relatively harmless on the basis of acidity alone), such as phthalic acid (but not phthalate compounds), fatty acids, etc.

2) A**Ammonia**@ and A**Chlorine**@ are highly specific categories. Aside from the obvious two compounds, they include a very few more substances which are particular formulations of them, or are compounds that so readily produce ammonia or chlorine that they are equivalent for practical purposes. AChlorine@ does not include organochlorine compounds.

3) Examples of **Hetero-Organics**: Nitrogen: Amines, amides, and azides; Sulfur: Thios and mercaptans; Phosphorus: Phosphorous esters. Examples of **Oxy-Organics**: Alcohols, aldehydes, anhydrides, ethers, glycols, ketones, oxides, peroxides, phenolics (salts and esters), and phthalates. RememberBonly use these two categories if you can=t use anything higher in the hierarchy.

4) A**Formulations**@ is for brand-name/trademark products (ANomex 24@), intended- use products (Afloor cleaner@), waste-stream products (Aslag bottoms@), and transportation codes for which the substance(s) of health concern are not known. If one or more substances are known (i.e., can fit something higher in the hierarchy), don=t use Formulations; use the category that fits the substance in the formulation which is highest in the hierarchy.

5) The same notion applies for any other mixture that, for whatever reason, is otherwise not able to be separated into individual componentsBuse the category that fits the substance that is highest in the hierarchy.

6) Pharmaceutical/biological/**medical** and **radioactive** compounds always go in AOther@, even if they fit other categories. Examples of pharm/bio compounds would be bacteria or drugs (but not the raw ingredients for making drugs, such as at a clandestine drug lab). AOther@ is otherwise a catch-all category for substances that don=t fit into any other category. Sometimes this will be because it is a complex chemical that does not fit into any other category clearly, and other times it will be because the nature of the chemical simply can't be determined.

7) The act of assigning chemical categories is time intensive and takes expert personnel. ATSDR has not yet been able to review the entire standard list of HSEES chemicals in order to ensure that all chemicals are properly assigned to their categories. If you see any that should be in another category, **please send an email** stating the chemical(s) and the proper categories to [TBD].

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