

**CHEMICAL HAZARD CLASSIFICATION AND LABELING :**  
**COMPARISON OF OPP REQUIREMENTS AND THE GHS**



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## **I. SCOPE AND PURPOSE**

This document compares current OPP classification and labeling requirements, as presented in the OPP Label Review Manual and regulations (40 CFR 156), with the provisions of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) as adopted by the United Nations Economic and Social Council in July 2003 (text at <http://www.unece.org/trans/danger/publi/ghs/officialtext.html>). It indicates how OPP label policies would need to change to be consistent with the GHS.

The GHS includes classification criteria and label elements for some physical hazards, respiratory sensitization and chronic effects that OPP does not now routinely label. Since implementation of the GHS does not mandate hazard labeling of these effects and there are no standard OPP practices to compare to GHS criteria and label elements, they are not included in this comparison.

OPP requires labeling for environmental effects not covered by the GHS, which includes only aquatic effects. These, too, are not included in this document since there are no GHS provisions to compare to OPP requirements. OPP's current practices would not need to change to be consistent with the GHS, since the GHS notes that authorities may impose labeling requirements to provide supplemental information, including information on hazards not covered by the system, provided they do not undermine or detract from GHS label information. (GHS 1.4.10.5.4.2)

It is important to note that the GHS is aimed at harmonizing classification/hazard identification for hazard communication purposes, not risk assessment, management or mitigation measures. (GHS 1.1.2.6) A separate exercise is required to determine if risk management measures that are now tied to hazard classification should be "decoupled." Initial analyses during development of the GHS indicated that there were few OPP requirements, beyond labeling, that were triggered automatically by hazard classification. Consistency with the GHS does not require continued linkage of classification with measures beyond hazard communication in labeling and safety data sheets.

## **II. GENERAL COMPARISON OF OPP PRACTICE AND THE GHS** **(THESE POINTS APPLY ACROSS HAZARD CLASSES)**

1. GHS organizes the hazard characteristics of chemicals based on “hazard classes” (specific physical, health or environmental effects, such as flammability, acute toxicity, aquatic toxicity) which are sub-divided into numerical “hazard categories” based on the severity of the hazard. The use of the term “category” is thus essentially the same as current OPP practice. The GHS uses Arabic numerals consistently, while OPP uses Roman numerals.
2. OPP only uses one symbol, the skull and crossbones for severe acute toxicity and products containing methanol at concentrations above 4%. The GHS uses symbols for all hazard classes (but not all categories).
3. GHS pictograms are composed of the appropriate symbol surrounded by a red diamond-shaped border, except that authorities may allow a black diamond border if the chemical is for domestic use only. OPP does not prescribe borders around the symbol.
4. OPP uses three signal words (danger, warning, and caution); the GHS only two (danger and warning). OPP prohibits the use of signal words for environmental or physical hazards; the GHS mandates their use for some categories (e.g., extremely flammable liquids).
5. GHS “hazard statements” are simple statements of hazard, a subset of what OPP calls “precautionary statements.” GHS does not specify any precautionary statements (e.g., first aid, personal protective equipment) beyond hazard statements. There are plans for future work to harmonize additional precautionary language at the international level through the GHS.
6. The GHS calls for product identifiers on labels but does not specify them. It also calls for disclosure of ingredients that contribute to the hazard classification of a mixture, but provides that national rules governing disclosure of Confidential Business Information will take precedence over ingredient disclosure provisions (GHS 1.4.10.5.2(d)).
7. The GHS contains conservative bridging principles for classifying untested chemical mixtures that are consistent with principles currently used by OPP. (For example, for acute toxicity, see GHS section 3.1.3.5).
8. The GHS also contains formulae for estimating the toxicity of untested mixtures based on the toxicities of known ingredients. It is not expected that OPP will use this approach. Rather, OPP is expected to require test data, consistent with current practice, unless there is a sound scientific basis for changing current practice. The rules for classifying untested

mixtures under the GHS are designed to ensure that the best available scientific information is used for classification of all types of chemicals.

9. The GHS is testing, and test-method, neutral for health and environmental hazards and is designed to permit self-classification to the maximum extent possible. U.S. law recognizes that pesticides, which are intended to be biologically active and have effects on living organisms, should be subject to testing and approved by a regulatory agency before they may be legally marketed. This is not the case for some other types of chemicals. Some regulatory agencies do not have the authority to require test data. Chemicals may be legally marketed without prior regulatory approval or label review, and it is up to producers to classify and label them based on the requirements of the appropriate regulatory agencies. The GHS is designed to meet the needs of both types of systems.

10. The GHS specifies test methods for physical hazards. To be consistent with the GHS, OPP would need to adopt both these methods and the corresponding GHS label elements.

11. Except as detailed in the specific hazard class comparisons in the following sections of this paper, other existing OPP label information requirements appear consistent with the GHS' allowance for "supplemental information," so long as that label information does not undermine GHS label elements. (See GHS sections 1.4.6.3 and 1.4.10.5.4.2 .) For example, such information may cover hazards not covered by GHS or provide greater detail.

12. Both the GHS and OPP specify that labels should include product and supplier identifiers. These elements of the GHS are not "standardized," but are generally consistent with OPP practice.

13. Since the principal purpose of this document is to indicate label changes that would be necessary to conform to the GHS, classification criteria are presented in summary fashion, as they are in the Label Review Manual. This document does not attempt to include all exceptions or special circumstances that might lead to divergent classifications, which of course could lead to different label requirements and would still be considered consistent with GHS implementation.

### **III. OPP/GHS CLASSIFICATION CRITERIA AND LABELING COMPARISON:**

#### **ACUTE TOXICITY**

##### **Summary Comparison:**

- The GHS has five categories for acute toxicity. OPP currently uses four categories. OPP Category IV has no upper limit. GHS Category 5 covers chemicals with toxicities expected to fall in the range of oral and dermal LD<sub>50</sub> of 2000 mg/kg -5000 mg/kg, or equivalent doses for inhalation toxicity.
- The basis of classification in both systems is the same: LD/LC<sub>50</sub> values or “acute toxicity estimates” of the LD/LC<sub>50</sub>.
- OPP uses the “danger” signal word and skull and crossbones symbol for chemicals in Categories I and II (e.g., oral LD<sub>50</sub> of up to 50 mg/kg). GHS uses the “danger” signal word and skull and cross bones symbol for chemicals in Categories 1-3 (e.g., oral LD<sub>50</sub> of up to 300 mg/kg) and introduces the exclamation point symbol for Category 4.
- The GHS specifies different classification criteria for inhalation toxicity based on whether the chemical is (1) a gas, (2) a vapor, or (3) a dust or mist. OPP does not distinguish among different types of inhalation toxicants.

OPP Criteria, Signal Words, Symbol, and Hazard Statements	GHS Criteria, Signal Words, Pictograms and Hazard Statements
<p><b><u>ACUTE ORAL TOXICITY:</u></b></p> <p><b><u>Category I</u></b>  <math>LD_{50} \leq 50 \text{ mg/kg}</math>  DANGER  Skull and Crossbones  Fatal if swallowed</p> <p><b><u>Category II</u></b>  <math>LD_{50} &gt; 50 \text{ mg/kg} \leq 500 \text{ mg/kg}</math>  WARNING  No symbol  May be fatal if swallowed</p> <p><b><u>Category III</u></b>  <math>LD_{50} &gt; 500 \text{ mg/kg} \leq 5000 \text{ mg/kg}</math>  CAUTION  No symbol  Harmful if swallowed</p> <p><b><u>Category IV</u></b>  <math>LD_{50} &gt; 5000 \text{ mg/kg}</math>  CAUTION or no signal word  No symbol  No hazard statement required; registrant may choose to use Category III statement</p>	<p><b><u>ACUTE ORAL TOXICITY:</u></b></p> <p><b><u>Category 1</u></b>  <math>LD_{50} \leq 5 \text{ mg/kg}</math>  <i>and</i>  <b><u>Category 2</u></b>  <math>LD_{50} &gt; 5 \text{ mg/kg} \leq 50 \text{ mg/kg}</math>  DANGER  Skull and Crossbones in diamond  Fatal if swallowed</p> <p><b><u>Category 3</u></b>  <math>LD_{50} &gt; 50 \text{ mg/kg} \leq 300 \text{ mg/kg}</math>  DANGER  Skull and Crossbones in diamond  Toxic if swallowed</p> <p><b><u>Category 4</u></b>  <math>LD_{50} &gt; 300 \text{ mg/kg} \leq 2000 \text{ mg/kg}</math>  WARNING  Exclamation point in diamond  Harmful if swallowed</p> <p><b><u>Category 5</u></b>  <math>LD_{50} &gt; 2000 \text{ mg/kg} \leq 5000 \text{ mg/kg}</math> (See Note (e) to GHS Table 3.1.1.)  WARNING  No symbol  May be harmful if swallowed</p> <p>[<math>LD_{50} &gt; 5000 \text{ mg/kg}</math>  not classified; no specified label elements]</p>

OPP Criteria, Signal Words, Symbol, and Hazard Statements	GHS Criteria, Signal Words, Pictograms and Hazard Statements
<p><b><u>ACUTE DERMAL TOXICITY</u></b></p> <p><b><u>Category I</u></b>  <math>LD_{50} \leq 200</math> mg/kg  DANGER  Skull and Crossbones  Fatal in contact with skin</p> <p><b><u>Category II</u></b>  <math>LD_{50} &gt; 200</math> mg/kg <math>\leq 2000</math> mg/kg  WARNING  No symbol  May be fatal in contact with skin</p> <p><b><u>Category III</u></b>  <math>LD_{50} &gt; 2000</math> mg/kg <math>\leq 5000</math> mg/kg  CAUTION  No symbol  Harmful in contact with skin</p> <p><b><u>Category IV</u></b>  <math>LD_{50} &gt; 5000</math> mg/kg  CAUTION or no signal word  No symbol  No hazard statement required; registrant may choose to use Category III statement</p>	<p><b><u>ACUTE DERMAL TOXICITY</u></b></p> <p><b><u>Category 1</u></b>  <math>LD_{50} \leq 50</math> mg/kg  <i>and</i>  <b><u>Category 2</u></b>  <math>LD_{50} &gt; 50</math> mg/kg <math>\leq 200</math> mg/kg  DANGER  Skull and Crossbones in diamond  Fatal in contact with skin</p> <p><b><u>Category 3</u></b>  <math>LD_{50} &gt; 200</math> mg/kg <math>\leq 1000</math> mg/kg  DANGER  Skull and Crossbones in diamond  Toxic in contact with skin</p> <p><b><u>Category 4</u></b>  <math>LD_{50} &gt; 1000</math> mg/kg <math>\leq 2000</math> mg/kg  WARNING  Exclamation point in diamond  Harmful in contact with skin</p> <p><b><u>Category 5</u></b>  <math>LD_{50} &gt; 2000</math> mg/kg <math>\leq 5000</math> mg/kg  (See Note (e) to GHS Table 3.1.1.)  WARNING  No symbol  May be harmful in contact with skin</p> <p>[<math>LD_{50} &gt; 5000</math> mg/kg  Not classified; no specified label elements]</p>

OPP Criteria Signal Words, Symbol, and Hazard Statements	GHS Criteria, Signal Words, Pictograms, and Hazard Statements
<p><b><u>ACUTE INHALATION TOXICITY</u></b></p> <p><b><u>Category I</u></b>  <math>LC_{50} \leq 0.05 \text{ mg/L}</math>  DANGER  Skull and crossbones  Fatal if inhaled</p> <p><b><u>Category II</u></b>  <math>LC_{50} &gt; 0.05 \text{ mg/L} \leq 0.5 \text{ mg/L}</math>  WARNING  No symbol  May be fatal if inhaled</p> <p><b><u>Category III</u></b>  <math>LC_{50} &gt; 0.5 \text{ mg/L} \leq 2.0 \text{ mg/L}</math>  CAUTION  No Symbol  Harmful if inhaled</p> <p><b><u>Category IV</u></b>  <math>LC_{50} &gt; 2 \text{ mg/L}</math>  No label elements required. Registrant may choose to use Category III labeling.</p>	<p><b><u>ACUTE INHALATION TOXICITY</u></b></p> <p><b><u>Category 1</u></b>  Dusts and mists: <math>LC_{50} \leq 0.05 \text{ mg/L}</math>  Gases: <math>LC_{50} \leq 100 \text{ ppm/V}</math>  Vapors: <math>LC_{50} \leq 0.5 \text{ mg/L}</math>  DANGER  Skull and crossbones in diamond  Fatal if inhaled</p> <p><b><u>Category 2</u></b>  Dusts and mists: <math>LC_{50} &gt; 0.05 \text{ mg/L} \leq 0.5 \text{ mg/L}</math>  Gases: <math>LC_{50} &gt; 100 \text{ ppm/V} \leq 500 \text{ ppm/V}</math>  Vapors: <math>LC_{50} &gt; 0.5 \text{ mg/L} \leq 2.0 \text{ mg/L}</math>  DANGER  Skull and Crossbones in diamond  Fatal if inhaled</p> <p><b><u>Category 3</u></b>  Dusts and mists: <math>LC_{50} &gt; 0.5 \text{ mg/L} \leq 1.0 \text{ mg/L}</math>  Gases: <math>LC_{50} &gt; 500 \text{ ppm/V} \leq 2500 \text{ ppm/V}</math>  Vapors: <math>LC_{50} &gt; 2.0 \text{ mg/L} \leq 10 \text{ mg/L}</math>  DANGER  Skull and Crossbones in diamond  Toxic if inhaled</p> <p><b><u>Category 4</u></b>  Dusts and mists: <math>LC_{50} &gt; 1.0 \text{ mg/L} \leq 5 \text{ mg/L}</math>  Gases: <math>LC_{50} &gt; 2500 \text{ ppm/V} \leq 5000 \text{ ppm/V}</math>  Vapors: <math>LC_{50} &gt; 10 \text{ mg/L} \leq 20 \text{ mg/L}</math>  WARNING  Exclamation point in diamond  Harmful if inhaled</p> <p><b><u>Category 5</u></b>  Dose equivalent to oral or dermal <math>LC_{50}</math> of 2000-5000mg/kg,(See Note (e) to GHS Table 3.1.1.)  WARNING  No Symbol  Maybe harmful if inhaled</p>



#### **IV. OPP/GHS CLASSIFICATION CRITERIA AND LABELING COMPARISON:**

##### **SKIN CORROSION/IRRITATION**

###### **Summary Comparison:**

- Both OPP and GHS have a single category for skin corrosion. The GHS subdivides this category based on duration of exposure, but the label elements are the same.
- GHS assumes that skin corrosives also cause severe eye damage and includes eye damage in the hazard statement. OPP does not, although in practice the statements are often combined for these effects based on data or other information (e.g., pH values).
- OPP defines skin irritation qualitatively (severe, moderate, and mild/slight/no irritation) based on 72 hour exposures. The GHS classification criteria specify scores and exposure times from commonly-used test protocols. These are consistent with OPP practice.
- OPP has three irritant categories: severe, moderate, or mild/slight/no irritation. GHS has two irritant categories: irritant and mild irritant.
- OPP requires no symbols for skin corrosion/irritation. GHS uses a corrosion symbol for Category 1 (corrosives), an exclamation point for Category 2 irritants, and no symbol for Category 3 (mild) irritants.
- Both OPP and GHS use the signal word “danger” for skin corrosives. OPP requires the signal word “warning” for severe irritants and “caution” for moderate irritants. GHS specifies the signal word “warning” for all chemicals that cause irritation and does not classify or prescribe label elements for chemicals that do not meet the criteria for irritation.

<b>OPP Criteria, Signal Words, Symbol, and Hazard Statements</b>	<b>GHS Criteria, Signal Words, Pictograms, and Hazards Statements</b>
<p><b><u>SKIN CORROSION</u></b></p> <p><b><u>Category I</u></b> Corrosive (tissue destruction into the dermis and/or scarring) DANGER No symbol Corrosive. Causes skin burns.</p> <p><b><u>SKIN IRRITATION</u></b></p> <p><b><u>Category II</u></b> Severe irritation (severe erythema or edema) at 72 hours WARNING No symbol Causes skin irritation.</p> <p><b><u>Category III</u></b> Moderate irritation (moderate erythema) at 72 hours CAUTION No symbol No hazard statement (other than precautionary language that specifies “avoid contact with skin or clothing”)</p> <p><b><u>Category IV</u></b> Mild or slight irritation (no irritation or slight erythema) at 72 hours No signal word, symbol or hazard statement required. Registrant may choose to use Category III statement</p>	<p><b><u>SKIN CORROSION</u></b></p> <p><b><u>Category 1 A, B, C</u></b> Destruction of skin tissue, with sub-categorization based on exposure of up to 3 minutes (A), 1 hour (B), or 4 hours (C). DANGER Corrosion symbol in diamond. Causes severe skin burns and eye damage.</p> <p><b><u>SKIN IRRITATION</u></b></p> <p><b><u>Category 2</u></b> Mean value of <math>\geq 2.3 &gt; 4.0</math> for erythema / eschar or edema in at least 2 of 3 tested animals from gradings at 24, 48, and 72 hours (or on 3 consecutive days after onset if reactions are delayed); inflammation that persists to end of the (normally 14-day) observation period. WARNING Exclamation mark in diamond Causes skin irritation.</p> <p><b><u>Category 3</u></b> Mean value of <math>\geq 1.5 &lt; 2.3</math> for erythema / eschar or edema in at least 2 of 3 tested animals from gradings at 24, 48, and 72 hours (or on 3 consecutive days after onset if reactions are delayed) WARNING No symbol Causes mild skin irritation.</p> <p>No classification or labeling unless Category 1-3 criteria are met.</p>

## **V. OPP/GHS CLASSIFICATION CRITERIA AND LABELING COMPARISON:**

### **SERIOUS EYE DAMAGE / IRRITATION**

#### **Summary Comparison:**

- Both OPP and the GHS have one category for corrosion/serious eye damage/irreversible effects on the eye and use the signal word “danger” for this category. The GHS also specifies the corrosion symbol. OPP requires no symbol.
- OPP uses three categories for eye irritants. GHS uses one category that is further divided into two subcategories, “irritant” and “mild irritant.” Mild irritant effects are those that are fully reversible within 7 days.
- OPP uses the “warning” signal word and no symbol for irritants in Category II and “caution” and no symbol for Category III. GHS uses “warning” and the exclamation mark symbol for Category 2A irritants and “warning” but no symbol for Category 2B mild irritants.
- Both OPP and GHS classification criteria are based on severity and duration of effects. OPP classification criteria for severity are described more qualitatively in the Label Review Manual. The GHS specifies scores from commonly used tests; these are consistent with OPP practice.
- OPP provides for Category IV classification of pesticides which cause minimal eye effects that clear in less than 24 hours. Such pesticides are not requiring to carry signal words or hazard statements, but registrants may choose to use the Category III hazard statement. GHS has no similar “minimal effects” category.

<b>OPP Criteria, Signal Words, Symbol, and Hazard Statements</b>	<b>GHS Criteria, Signal Word, Pictograms, and Label Statements</b>
<p><b><u>PRIMARY EYE IRRITATION</u></b></p> <p><b><u>Category I</u></b> Corrosive (irreversible destruction of ocular tissue) or corneal involvement or irritation persisting for more than 21 days. DANGER No symbol Corrosive. Causes irreversible eye damage.</p> <p><b><u>Category II</u></b> Corneal involvement or irritation clearing in 8-21 days. WARNING No symbol Causes substantial but temporary eye injury.</p> <p><b><u>Category III</u></b> Corneal involvement or irritation clearing in 7 days or less. CAUTION No symbol Causes moderate eye irritation.</p> <p><b><u>Category IV</u></b> Minimal effects clearing in less than 24 hours. No signal word, symbol or hazard statement required. Registrant may choose to use Category III statement.</p>	<p><b><u>SERIOUS EYE DAMAGE/EYE IRRITATION</u></b></p> <p><b><u>Category 1</u></b> Effects on the cornea, iris or conjunctiva that are not expected to reverse or that have not fully reversed within 21 days. DANGER Corrosion symbol in diamond. Causes severe eye damage.</p> <p><b><u>Category 2A</u></b> Effects on the cornea, iris or conjunctiva that fully reverse within 21 days. WARNING Exclamation mark in diamond. Causes severe eye irritation.</p> <p><b><u>Category 2B</u></b> Effects on the cornea, iris or conjunctiva that fully reverse within 7 days. WARNING No symbol Causes eye irritation.</p>

**VI. OPP/GHS CLASSIFICATION CRITERIA AND LABELING  
COMPARISON:**

**SKIN/DERMAL SENSITIZATION**

**Summary Comparison :**

- Both OPP and the GHS essentially use one category, though OPP does not use the term “category” for this effect. A chemical is either classified as a skin sensitizer or it is not.
- The GHS uses the signal word “warning” and the exclamation mark symbol for skin sensitizers. OPP uses no symbol and no signal word.

<b>OPP Criteria, Signal Words, Symbol, and Hazard Statements</b>	<b>GHS Criteria, Signal Word, Pictograms, and Label Statements</b>
<p data-bbox="167 422 656 453"><b><u>SKIN/DERMAL SENSITIZATION</u></b></p> <p data-bbox="167 533 667 600">Product is a sensitizer or is positive for sensitization.</p> <p data-bbox="204 718 703 898">No signal word No symbol Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.</p>	<p data-bbox="826 422 1313 453"><b><u>SKIN/DERMAL SENSITIZATION</u></b></p> <p data-bbox="826 495 1373 676"><b><u>Category 1</u></b> Evidence in humans that the substance can induce sensitization by skin contact in a substantial number of persons, or positive results from appropriate animal tests.</p> <p data-bbox="865 718 1287 825">WARNING Exclamation mark in diamond May cause allergic skin reaction.</p>

## **VII. OPP/GHS CLASSIFICATION CRITERIA AND LABELING COMPARISON:**

### **ENVIRONMENTAL HAZARDS**

#### **Summary Comparison:**

- GHS covers only one environmental hazard: aquatic toxicity. Work to develop terrestrial toxicity as a GHS hazard class may proceed in the future. In the meantime, OPP labeling for hazards other than aquatic toxicity (e.g., bees, mammals) may be considered “supplemental information,” consistent with but not part of the GHS.
- The GHS has three acute and four chronic categories for aquatic toxicity. Categories 1-3 of chronic toxicity are based on combining the criteria for Categories 1-3 acute toxicity with criteria for persistence in the aquatic environment. Category 4 chronic toxicity is based on persistence alone, in the absence of toxicity data. OPP does not now label chronic aquatic toxicity.
- OPP requires no signal word or symbol for aquatic toxicity. The GHS specifies the “dead fish and tree” symbol and the signal word “warning” for Category 1 acute toxicity and Category 1 chronic toxicity. For Category 2 chronic toxicity, the GHS specifies the symbol but no signal word.
- OPP requires the hazard statement “this pesticide is toxic to fish” based on studies showing that the active ingredient has a fish acute toxicity LC-50 of 1 ppm or less, if the pesticide is intended for outdoor use. OPP requires the statement “this pesticide is extremely toxic to fish” if there are field studies or accident data (such as FIFRA 6(a) 2 reports) showing fish kills. OPP also requires specific hazard/precautionary statements for a number of individual pesticides. The GHS sets out toxicity and persistence criteria for each hazard category, and accompanying hazard statements.
- GHS testing protocols for aquatic toxicity are still in the process of validation.

<b>OPP Criteria, Signal Words, Symbol, and Hazard Statements</b>	<b>GHS Criteria, Signal Word, Pictograms and Label Statements</b>
<p><b><u>FISH ACUTE TOXICITY</u></b></p> <p><b>Field studies</b> or accident history, such as the FIFRA 6(a)(2) reports, indicate that use of the pesticide may result in fatality to fish.</p> <p>No signal word No symbol This pesticide is extremely toxic to fish.</p> <p><b>Fish acute</b> <math>LC_{50} \leq 1</math> ppm No signal word No symbol This pesticide is toxic to fish.</p>	<p><b><u>HAZARDOUS TO THE AQUATIC ENVIRONMENT</u></b></p> <p><b><u>Acute Toxicity Category 1</u></b> 96 hr <math>LC_{50}</math> (fish) <math>\leq 1</math> mg/L 48 hr <math>EC_{50}</math> (crustacea) <math>\leq 1</math> mg/L 72/96 hr <math>ErC_{50}</math> (aquatic plants) <math>\leq 1</math> mg/L WARNING Fish and tree in diamond Very toxic to aquatic life</p> <p><b><u>Acute Toxicity Category 2</u></b> 96 hr <math>LC_{50}</math> (fish) <math>&gt;1 \leq 10</math> mg/L 48 hr <math>EC_{50}</math> (crustacea) <math>&gt;1 \leq 10</math> mg/L 72/96 hr <math>ErC_{50}</math> (aquatic plants) <math>&gt;1 \leq 10</math> mg/L No signal word No symbol is used Toxic to aquatic life</p> <p><b><u>Acute Toxicity Category 3</u></b> 96 hr <math>LC_{50}</math> (fish) <math>&gt;10 \leq 100</math> mg/L 48 hr <math>EC_{50}</math> (crustacea) <math>&gt;10 \leq 100</math> mg/L 72/96 hr <math>ErC_{50}</math> (aquatic plants) <math>&gt;10 \leq 100</math> mg/L No signal word No symbol is used Harmful to aquatic life</p>



	<p><b><u>Chronic toxicity</u></b> (see GHS document Chapter 3.10 for persistence criteria)</p> <p><b><u>Category 1</u></b> WARNING Fish and tree in diamond border Very toxic to aquatic life with long lasting effects</p> <p><b><u>Category 2</u></b> No signal word Fish and tree in diamond border Toxic to aquatic life with long lasting effects</p> <p><b><u>Category 3</u></b> No signal word No symbol Harmful to aquatic life with long lasting effects</p> <p><b><u>Category 4</u></b> No signal word No symbol May cause long lasting harmful effects to aquatic life</p>
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## **VIII. OPP/GHS CLASSIFICATION CRITERIA AND LABELING COMPARISON:**

### **FLAMMABILITY**

#### **Summary Comparison:**

- Both OPP and GHS specify test methods and set criteria based on test results.
- OPP classification criteria are based on flashpoint (all pesticides) and flash extension tests (pressurized containers). There are three categories for pressurized containers, and four for nonpressurized containers.
- GHS specifies criteria and label elements for two categories of flammable gases, two categories of flammable aerosols, four categories of flammable liquids, and two categories of flammable solids. OPP does not distinguish based on physical state.
- OPP uses no signal words and no symbol, except that a flame symbol is required for total release fogger products (40 CFR 156.78(d)(3)). GHS uses the “danger” signal word for Category 1 flammable solids, gases and aerosols and Categories 1 and 2 flammable liquids; and the signal word “warning” for Category 2 flammable solids, gases and aerosols and Categories 3 and 4 flammable liquids. The GHS uses the flame symbol for Category 1 flammable gases, Categories 1 and 2 flammable aerosols, Categories 1-3 flammable liquids, and Categories 1 and 2 flammable solids.

<b>OPP Criteria, Signal Words, Symbol, and Hazard Statements</b>	<b>GHS Criteria, Signal Word, Pictograms, and Label Statements</b>
<p><b><u>FLAMMABILITY</u></b></p> <p><b><u>Pressurized Containers</u></b> Flash point <math>\leq</math> 20 degrees F; if there is a flashback at any valve opening. No signal word No symbol Extremely flammable</p> <p>Flash point <math>&gt;</math> 20 degrees F and <math>\leq</math> 80 degrees F or if the flame extension is more than 18" long at a distance of 6" from the flame. No signal word No symbol Flammable</p> <p>All other pressurized containers. No signal word No symbol Contents under pressure (plus other precautionary language)</p> <p><b><u>Nonpressurized Containers</u></b> Flashpoint <math>\leq</math> 20 degrees F. No signal word No symbol Extremely flammable</p> <p>20 degrees F <math>&lt;</math> flashpoint <math>\leq</math> 80 degrees F. No signal word No symbol Flammable</p> <p>80 degrees F <math>&lt;</math> flashpoint <math>\leq</math> 150 degrees F No signal word No symbol Combustible</p>	<p><b><u>FLAMMABLE LIQUIDS</u></b></p> <p><b><u>Category 1</u></b> Flash point <math>&lt;</math> 23 degrees C and initial boiling point <math>\leq</math> 35 degrees C. DANGER Flame in diamond Extremely flammable liquid and vapour</p> <p><b><u>Category 2</u></b> Flash point <math>&lt;</math> 23 degrees C and initial boiling point <math>&gt;</math> 35 degrees C. DANGER Flame in diamond Highly flammable liquid and vapour</p> <p><b><u>Category 3</u></b> Flash point <math>\geq</math> 23 degrees C <math>\leq</math> 60 degrees C. WARNING Flame in diamond Flammable liquid and vapour</p> <p><b><u>Category 4</u></b> Flash point <math>&gt;</math> 60 degrees C <math>\leq</math> 93 degrees C. WARNING No symbol Combustible liquid</p>

<p><b><u>Flammability for Nonpressurized Containers (cont.)</u></b></p> <p>Flashpoint &gt; 150 degrees F.          No signal word.          No symbol          No hazard statement or other text required.</p>	<p><b><u>FLAMMABLE AEROSOLS</u></b>          See GHS Document Chapter 2.3 for detailed classification criteria.</p> <p><b><u>Category 1</u></b>          DANGER          Flame in diamond.          Extremely flammable aerosol</p> <p><b><u>Category 2</u></b>          WARNING          Flame in diamond          Flammable aerosol</p> <p><b><u>FLAMMABLE SOLIDS</u></b></p> <p><b><u>Category 1</u></b>          Using the burning rate test, substances or mixtures other than metal powders:          (a) wetted zone does not stop fire and          (b) burning time &lt; 45 seconds or              burning rate &gt; 2.2 mm/second          Using the burning rate test, metal powders that have burning time ≤ 5 minutes          DANGER          Flame in diamond          Flammable solid</p> <p><b><u>Category 2</u></b>          Using the burning rate test, substances or mixtures other than metal powders:          (a) wetted zone does not stop fire for at least 4 minutes and          (b) burning time &lt; 45 seconds or              burning rate &gt; 2.2 mm/second          Using the burning rate test, metal powders that have burning time &gt; 5 ≤ 10 minutes          WARNING          Flame in diamond          Flammable solid</p>
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	<p><b><u>FLAMMABLE GASES</u></b></p> <p><b><u>Category 1</u></b> Gases, which at 20 degrees C and a standard pressure of 101.3 kPA:</p> <ul style="list-style-type: none"><li>(a) are ignitable when in a mixture of 13% or less by volume in air; or</li><li>(b) have a flammable range with air of at least 12 percentage points regardless of the lower flammable limit.</li></ul> <p>DANGER Flame in diamond Extremely flammable gas</p> <p><b><u>Category 2</u></b> Gases, other than those of category 1, which, at 20 degrees C and a standard pressure of 101.3 kPA, have a flammable range while mixed in air.</p> <p>WARNING No symbol used Flammable gas</p>
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## **IX. OPP/GHS CLASSIFICATION CRITERIA AND LABELING COMPARISON:**

### **OTHER PHYSICAL OR CHEMICAL HAZARDS**

#### **Summary Comparison:**

- OPP does not specify classification criteria, symbols, signal words or label statements for physical hazards other than flammability but notes that when data demonstrate such hazards, (for example, explosivity), appropriate hazard statements must appear on the label.
- Part 2 of the GHS document specifies classification criteria and label elements for explosives, oxidizers, compressed gases, self-reactive and self-heating substances, pyrophoric liquids and solids, substances which emit flammable gases in contact with water, organic peroxides, and metal corrosives.
- To be consistent with the GHS, OPP would need to adopt the GHS criteria and label elements, as well as the associated test methods, for each the physical/chemical hazard class or category it decides to cover.