



# The “Globally Harmonized System” of Classification and Labeling of Chemicals (GHS) – What is it?

**W**ater and wastewater utility workers particularly frequently handle and/or may transport a variety of chemicals. These chemicals are a danger for human health and the environment. The concern is worldwide.

Thanks to the United Nations, an internationally “harmonized” approach was established concerning the classification and labeling of chemicals. The development of the consistent labeling was suggested in order to provide uniform information concerning exposure and protection of people.

The new system is called the “Globally Harmonized System of Classification and Labeling of Chemicals (GHS)”. This new system addresses the classification of chemicals by types of hazard and proposes to implement “harmonized” hazard communication elements, including labels and uniform safety data sheets. The goal is to ensure that the information on physical hazards from chemicals will be available in a consistent format to better protect human health and the environment during the handling, transportation and use of various chemicals. The GHS also provides a basis for standardization of rules and regulations on chemicals at the national, regional and worldwide levels, which is also an important factor also for international trade.

In simple terms, the GHS was developed due to the many chemicals and different ways each country regulates those chemicals. Even here in the United States, regulators include ANSI, OSHA, EPA and NFPA to name a few and each had differing requirements. The GHS now takes all those rules and regulations and for the most part, standardizes them.

Anyone who has ever read a material safety data sheet knows how confusing it can be. There often is no consistency for the same chemical, depending on the manufacturer. The design of the safety data sheet (SDS) will now become standardized as a result of the new system. This effort began several years ago; the deadline to initially train employees on the new

**As of June 1, 2015, the Hazard Communication Standard (HCS) will require pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard(s). The pictogram on the label is determined by the chemical hazard classification.**

| HCS Pictograms and Hazards  |   |   |
|---|---|---|
| <p><b>Health Hazard</b></p> <ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive Toxicity</li> <li>• Respiratory Sensitizer</li> <li>• Target Organ Toxicity</li> <li>• Aspiration Toxicity</li> </ul> | <p><b>Flame</b></p> <ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-Heating</li> <li>• Emits Flammable Gas</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul> | <p><b>Exclamation Mark</b></p> <ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin Sensitizer</li> <li>• Acute Toxicity</li> <li>• Narcotic Effects</li> <li>• Respiratory Tract Irritant</li> <li>• Hazardous to Ozone Layer (Non-Mandatory)</li> </ul> |
| <p><b>Gas Cylinder</b></p> <ul style="list-style-type: none"> <li>• Gases Under Pressure</li> </ul>   | <p><b>Corrosion</b></p> <ul style="list-style-type: none"> <li>• Skin Corrosion/Burns</li> <li>• Eye Damage</li> <li>• Corrosive to Metals</li> </ul>   | <p><b>Exploding Bomb</b></p> <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>  |
| <p><b>Flame Over Circle</b></p> <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>   | <p><b>Environment (Non-Mandatory)</b></p> <ul style="list-style-type: none"> <li>• Aquatic Toxicity</li> </ul>  | <p><b>Skull and Crossbones</b></p> <ul style="list-style-type: none"> <li>• Acute Toxicity (fatal or toxic)</li> </ul>  |

labeling elements and Safety Data Sheets was December 1, 2013. By June 1, 2015 chemical manufacturers are supposed to have reclassified their chemicals and provide SDS's and updated chemical labels to users. By December 1, 2015 chemical distributors will be required to ship products with the updated safety data sheets and chemical labels. By June 1, 2016, there is to be full compliance with the Globally Harmonized System and hazard communications program and with all workplace labeling updated.

**The 16 sections in an SDS are required to be listed in the following order:**

**Section 1:** Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

**Section 2:** Hazard(s) identification includes all hazards regarding the chemical; required label elements.

**Section 3:** Composition/information on ingredients includes information on chemical ingredients; trade secret claims.



**Section 4:** First-aid measures includes important symptoms/effects, acute, delayed; required treatment.

**Section 5:** Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.

**Section 6:** Accidental release measures lists emergency procedures; protective equipment; proper methods of containment and cleanup.

**Section 7:** Handling and storage lists precautions for safe handling and storage, including incompatibilities.

**Section 8:** Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).

WHATEVER IT TAKES!



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## Two Classifications for Chemicals

One of the other major changes due to the GHS is that chemicals will be classified into two categories: 1) Physical hazards; and, 2) Health Hazards. The current NFPA rating for chemicals is where 1 is the least hazardous and 4 is the most hazardous. The two hazard categories will be given further ratings, but a 1 rating will be the most hazardous and 4 will be the least hazardous.

### The physical hazards will be:

- Explosives
- Flammable Gases
- Flammable Aerosols
- Oxidizing Gases
- Gases Under Pressure
- Flammable Liquids
- Flammable Solids
- Self-Reactive Substances
- Pyrophoric Liquids
- Pyrophoric Solids
- Self-Heating Substances
- Substances which, in contact with water emit flammable gases
- Oxidizing Liquids
- Oxidizing Solids
- Organic Peroxides
- Corrosive to Metals

### The Health Hazards will be:

- Acute Toxicity
- Skin Corrosion/Irritation
- Serious Eye Damage/Eye Irritation
- Respiratory or Skin Sensitization
- Germ Cell Mutagenicity
- Carcinogenicity
- Reproductive Toxicology
- Target Organ Systemic Toxicity - Single Exposure
- Target Organ Systemic Toxicity - Repeated Exposure
- Aspiration Toxicity

**Section 9:** Physical and chemical properties lists the chemical's characteristics.

**Section 10:** Stability and reactivity lists chemical stability and possibility of hazardous reactions.

**Section 11:** Toxicological information includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

**Section 12:** Ecological information\*

**Section 13:** Disposal considerations\*

**Section 14:** Transport information\*

**Section 15:** Regulatory information\*

**Section 16:** Other information: Includes the date of preparation or last revision and any other pertinent information.

\* Note: OSHA won't enforce Sections 12 through 15 because those sections fall under the regulatory authority of other agencies.

## Disposal of chemicals

The Globally Harmonized System also requires notice how to dispose of the chemicals. The entire GHS is to provide what is referred to as "cradle to the grave" for chemicals. I have visited many water and wastewater plants and on numerous occasions, operators question how to dispose of chemicals that may have been purchased by previous employees. I typically recommend that the water or wastewater utility contact the supplier if known, or the county hazardous waste site and discuss the issue with them.

KRWA is in the midst of planning the 2015 Conference & Exhibition. I hope that you will plan to attend. And do watch for a session on the topic of the Globally Harmonized System.

*Charlie Schwindamann has been Wastewater Tech at KRWA since September 1999. Charlie holds Class II Water and Class I Wastewater Operator certification. Charlie also served for 12 years on the Marysville city council.*



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