

ARE YOU PREPARED FOR GHS?



Lubricant companies should act now to comply with the uniform standard for providing regulatory health and safety information.

KEY CONCEPTS

- The purpose of GHS is to provide a uniform standard for providing health and safety information.
- A new format for safety data sheets and new product labels is required to comply with GHS.
- Due to the complexity of some lubricants such as metalworking fluids, formulators need a strong understanding of the regulation to ensure the transition to GHS is done as smoothly as possible.
- No uniform safety data sheets and labels are achievable because regional differences need to be taken into consideration.
- There is some concern the lubricant industry has not taken steps to comply with GHS, which is to be implemented in the EU and the U.S. on June 1, 2015.

THE MARCH 2013 TLT¹ FEATURED AN ARTICLE ABOUT THE GLOBAL HARMONIZED SYSTEM (GHS) THAT INCLUDED BASIC INFORMATION ON HOW THE LUBRICANT INDUSTRY CAN COMPLY WITH THIS REGULATION, which becomes effective on June 1, 2015. With about six months to go before implementation, there is still concern that the lubricant industry is not moving forward with the steps needed to comply with GHS.

This follow-up article is designed to remind industry players that they now have fewer than six months to comply. If your company has not started to take steps to comply with GHS, there is still time to do so.

Handling regulatory health and safety matters has become an enormous challenge for the lubricant industry. There are matters of preparing safety data sheets (SDSs), product labels and answering questions about specific concerns from end-users.

To make matters even more complicated, different regions of the world have developed different formats and regulations for handling health and safety matters. For example, a SDS in the U.S. is formatted differently than one in Canada and in the European Union (EU).

In addition, each country or region may evaluate a specific chemical substance in a different fashion. An example showing how a specific chemical substance is evaluated by 10 countries and the EU is shown in Figure 1. This unnamed substance has at least four ratings, ranging from non-toxic to toxic.

Also adding to the complexity of the situation is the process that needs to be used for developing SDSs and product labels for lubricants, which are mixtures of various basestocks and additives. In particular, metalworking fluids (MWFs) can be extremely complicated to deal with because they are prepared from a diverse number of additives.

As today's economy has become more global, with lubricant companies shipping products to many different geographical markets, the pressure has increased to develop a uniform format for providing health and safety information on specific chemical substances and on mixtures such as lubricants.

Why do we need GHS?

FECC

Example: Substance - oral toxicity $LD_{50} = 257$ mg/kg

GHS	Danger (Skull & Cross Bones)
Transport	liquid: slightly toxic; solid: not classified
EU	Harmful (St Andrew's Cross)
US	Toxic
CAN	Toxic
Australia	Harmful
India	Non-toxic
Japan	Toxic
Malaysia	Harmful
Thailand	Harmful
New Zealand	Hazardous
China	Not Dangerous
Korea	Toxic



Figure 1 | This slide from a representative of the European Association of Chemical Distributors shows how one chemical substance is evaluated by 10 countries and the EU. This example helps to justify the need for GHS. (Courtesy of C.S.B. GmbH)

The initial efforts to develop a uniform standard were proposed by the United Nations (UN) in 1992 at the Rio Conference convened by the Organization for Economic Cooperation and Development (OECD). Approval took place in 2002, and the regulation is known as the Global Harmonized System of Classification and Labeling of Chemicals or GHS.²

The five main purposes of GHS include:

1. Enhance protection of human health and the environment.
2. Bridge the differences among the systems implemented in the developed world (Canada, EU and U.S.).
3. Develop a framework that can be used by still-developing countries without a system.
4. Reduce the need for testing and evaluation of chemicals.
5. Facilitate international trade.

Some regions of the world have

adopted the GHS. Those include the EU, Japan, Malaysia, New Zealand and Singapore. Two of the more important geographical markets are on the verge of implementing GHS. China is scheduled to adopt GHS at the end of 2014, and Brazil plans to do so at the same time as the U.S.

With the world moving toward a uniform standard, the U.S. Government announced in March 2012, through OSHA, that it will adopt GHS by updating the Hazard Communication Standard.³ The update is known as HazCom 2012, with final implementation to be done by all lubricant suppliers by June 1, 2015.

While the EU has implemented GHS for specific chemical substances, manufacturers of formulated products, including lubricants, will need to implement GHS in the EU also on June 1, 2015.

Canada also is adopting GHS on June 1, 2015, but the nation has yet to announce an implementation schedule.⁴

The implementation of GHS will lead to a change in the format for preparing regulatory information. In-

formation on the health and safety of specific chemical substances and mixtures will change, and new labels will be introduced.

The purpose of this article is to provide an update on GHS and discuss several key issues. However, it is provided for information purposes only and is not intended to provide legal or compliance instructions. GHS is an extremely important and complex issue for those who manufacture, supply or work with chemicals, and STLE members are advised to retain their own in-house or outside experts to guide them through the implementation and compliance process.

This article will examine such issues as:

1. Starting the GHS compliance process at this late date.
2. Should more training be done?
3. What can be done to obtain GHS-compliant information from suppliers as soon as possible?
4. Any indication that OSHA may be willing to extend the June 1, 2015 deadline.
5. Thoughts on using software packages to expedite the process.
6. An update on Canada's implementation of GHS.

A perspective from the EU is also provided, as it has implemented GHS for specific chemical substances but will be implementing GHS for lubricants at the same time as the U.S.

To seek a broad range of opinions, TLT interviewed the following individuals, some of whom contributed to the first article:

- Mark Ogburn, CAP® program development manager, August Mack Environmental, Inc.
- Dave Morrison, HSE specialist, Castrol Industrial North America.
- Heinz Dobbertin, managing director, C.S.B. GmbH.

New GHS Safety Data Sheet (SDS) Format

Current Format (10 sections)

- Ingredients
- Physical data
- Fire and explosion hazard data
- Reactivity data
- Environmental and disposal information
- Health hazard data
- First aid
- Handling precautions
- Additional information
- Transporting information

GHS Format (16 sections)

- Identification
- Hazard(s) identification
- Composition/information on ingredients
- First aid
- Fire fighting measures
- Accidental release measures
- Handling and storage
- Exposure controls/personal protection
- Physical and chemical properties
- Stability and reactivity
- Toxicological information
- Ecological information
- Disposal
- Transporting information
- Regulatory information
- Other

Figure 2 | The GHS format for SDS is different than what is generally used at the present time. New sections to be included are shown in blue font. (Courtesy of Chemical Solutions)

- Dr. Eugene White, EHS consultant.
- Carl Wainwright, Americas Product Stewardship Advisor, Global Product Integrity Systems, Exxon-Mobil Fuels, Lubricants & Specialties Marketing Co.
- Dr. John Howell, president, GHS Resources, Inc.

GHS BASICS

The first thing to note in moving to GHS is that the format for the SDS changes. Figure 2 shows the differences between a format commonly used now and the new GHS format. There are 16 sections in the new format as compared to 8-10 sections that are most commonly used at present. Most of the same sections are included, though they are organized in a different fashion. The four new sections are listed in blue font.

For the SDS, each of the sections must be written in order from Section One (Identification) through Section 16 (Other). But note that the ecological, disposal, transport and regulatory information sections are not required.

Other elements included on the SDS and the product labels are pictograms, signal words, hazard statement and a precautionary statement. Each pictogram represents at least one hazard class. Appendix C of HazCom 2012 provides a full description of these hazard classes and the mandatory language that must be used with them. Figure 3 taken from Appendix C shows the pictograms and the hazard classes covered by each of them. If the specific lubricant is found to meet the guideline for one of the hazard classes, then the pictogram must be used on the SDS and product label. Only the environment pictogram will not be mandatory under GHS.

From the MWF perspective, the most likely pictograms are the exclamation mark and corrosion. Figure 3 shows what it

means for a product to have either of these labels. An exclamation mark means that the substance could be an irritant (skin and eyes), skin sensitizer, exhibits acute toxicity and is a respiratory tract irritant. For corrosion, the substance can cause skin corrosion/burns, eye damage and also be corrosive to metals.

The signal words needed to classify a MWF are either *DANGER* or *WARNING*. The former is an indication that the fluid is a severe hazard, while the latter means that it is a less severe hazard. Hazard statements are used to describe the nature and, where appropriate, the degree of the hazard. Precautionary statements are used to recommend ways to minimize or prevent adverse effects.

Each of the hazard classes is further subdivided into several categories that are given a numeric rating. The number of subdivisions is dependent upon the hazard class. In general for GHS, the lowest number (usually one) represents the most hazardous category. This approach is completely opposite to how the Hazard Material Identification System (HMIS®) and the National Fire Protection Association (NFPA) are organized. Both systems, widely used in the U.S., rank the most severe rating with the highest number.

C.2.3.2 One of eight standard hazard symbols shall be used in each pictogram. The eight hazard symbols are depicted in Figure C.1. A pictogram using the exclamation mark symbol is presented in Figure C.2, for the purpose of illustration.

Figure C.1 – Hazard Symbols and Classes









Flame	Flame Over Circle	Exclamation Mark	Exploding Bomb
 Flammables Self Reactives Pyrophorics Self-heating Emits Flammable Gas Organic Peroxides	 Oxidizers	 Irritant Dermal Sensitizer Acute Toxicity (harmful) Narcotic Effects Respiratory Tract Irritation	 Explosives Self Reactives Organic Peroxides
Corrosion	Gas Cylinder	Health Hazard	Skull and Crossbones
 Corrosives	 Gases Under Pressure	 Carcinogen Respiratory Sensitizer Reproductive Toxicity Target Organ Toxicity Mutagenicity Aspiration Toxicity	 Acute Toxicity (severe)

Figure 3 | This figure taken directly from Appendix C of HazCom 2012 shows the eight pictograms that will need to be used on SDSs and labels and what hazard classes they cover. (Courtesy of GHS Resources, Inc.)

Estimating Skin Hazards based on known ingredient information

- Table A.2.4 Concentration of ingredients of a mixture for which the additivity approach does not apply, that would trigger classification of the mixture as hazardous to skin

Ingredient	Concentration	Mixture classified as skin
Acid with $\text{pH} \leq 2$	$\geq 1\%$	Category 1
Base with $\text{pH} \geq 11.5$	$\geq 1\%$	Category 1
Other corrosive (Category 1) ingredients for which additivity does not apply	$\geq 1\%$	Category 1
Other irritant (Category 2) ingredients for which additivity does not apply, including acids and bases	$\geq 3\%$	Category 2

The optimum way to evaluate a lubricant is to use test data. When not available, hazards can be estimated by using either the threshold or additivity method. The former involves determining the concentration of a specific component and comparing it to a specific concentration limit. In the latter, the sum of the concentration of specific ingredients is calculated to see if the value exceeds a specific concentration limit. Requirements for specific categories within hazard classes are provided in Appendix A of the HazCom 2012.

One of the most common issues for MWFs is skin irritation due to the high alkalinity of many water-based fluids. Under the GHS format, the threshold method applies, as shown in Figure 4. Either the pH of the mixture determines its classification as a skin irritant or else the classification of specific Category 1 and 2 raw materials that cannot be evaluated using the additivity approach.

One of the raw materials for which

Figure 4 | The threshold method is shown as applied to skin hazards. Classification of skin hazards is made based on the pH of the mixture or on whether a specific raw material in Category 1 or 2 is at a concentration where the entire mixture must be designated in either of those categories. The table number refers to its location in Appendix A of HazCom 2012. (Courtesy of GHS Resources, Inc.)

Application: Compressor Oil

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Salt Formation

Bases

- Monoethanolamine (MEA)
- Triethanolamine (TEA)
- Sodium Hydroxide
- Potassium Hydroxide

Acids

- Oleic Acid
- Tall Oil Fatty Acid
- Caprylic Acid
- Neodecanoic Acid
- Pelargonic Acid
- Boric Acid
- C10 – C12 Diacids (sebacic, undecanedioic and dodecanedioic)

Figure 5 | Any one of the bases in the left column can form a salt with an acid in the right column in a metalworking fluid. Formulators will need to evaluate potential salts when determining how to properly prepare a GHS SDS and label for their products. (Courtesy of Chemical Solutions)

the additivity approach does not apply to acids and bases. As shown in Figure 5, MWF formulators also will need to evaluate the potential salts that can be formed from the variety of bases and acids used. These salts also must be taken into consideration in evaluating the hazardous nature of a MWF formulation.

Guidelines for the additivity method are shown in Figure 6 for the Category 1 and 2 hazard categories. During his presentation on GHS at STLE's 2012 Annual Meeting, STLE Fellow Dr. John Howell, president of GHS Resources, Inc., in Edinboro, Pa., showed how the additivity method is used in Figure 7.⁵

In this example, he evaluated a fictitious MWF containing the following raw materials:

1. Monoethanolamine (MEA) = 0.9 percent (Category 1)
2. Triethanolamine (TEA) = 2.0 percent (Category 2)
3. Sodium Petroleum Sulfonate (Na Pet Sulf) = 4.0 percent (Category 2).

As noted in Figure 7, the process involves first determining if there is sufficient concentration of all Category 1 raw materials for the MWF. The only Category 1 raw material is MEA, which is present at a concentration that does not equal 5 percent.

Then the process moves to evaluation of the two Category 2 raw materials: TEA and sodium petroleum sulfonate. In the calculations, MEA has to be included as a Category 1 raw material, and its presence in the MWF means that the concentration of Category 2 raw materials exceeds the 10 percent limit. The result is the MWF must be designated as skin Category 2 under the GHS system.

Compliance with GHS is mandatory in the EU and the U.S. by June 1,

2015. All companies involved (manufacturers, distributors and users) may continue to follow the same procedures for preparing SDSs and labels that they currently use and that are in compliance with current regulations until converting over to GHS. U.S. distributors may sell products in compliance with current regulations for six additional months (until Dec. 1, 2015).

Armed with this information, the MWF formulator must now evaluate its product formulations to assess the nature of hazards. MWFs are extremely complex, making this process very difficult.

Typically, preparation of SDSs is carried out in part by reviewing information obtained from raw material suppliers. At this point, raw material suppliers must meet the same timeline as MWF formulators, which means they do not have to provide GHS SDSs until June 1, 2015.

One source that lubricant formulators should use to evaluate the rating of raw materials is the European Chemicals Agency (ECHA), Classification & Labeling (C&L) Inventory Database that can be accessed at <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>.

Estimating Skin Hazards based on known ingredient information

- Table A.2.3 Concentration of ingredients of a mixture classified as Skin Category 1 and/or Skin Category 2 that would trigger classification of the mixtures as hazardous to skin

Sum of ingredients classified as	Concentration triggering classification of mixture as	
	Skin corrosive Category 1	Skin irritant Category 2
Skin Category 1	≥ 5%	≥ 1% but < 5%
Skin Category 2		≥ 10%
10 x (Skin Category 1) + Skin Category 2		≥ 10%

Figure 6 | Guidelines for using the additivity method for determining the skin hazard category for a metalworking fluid formulation are shown. Note the final designation involves not just the individual rankings of raw materials but their sum. The table number refers to its location in Appendix A of HazCom 2012. (Courtesy of GHS Resources, Inc.)

The information is provided by notifications from all companies using a particular chemical substance in the EU. Ratings for specific chemical substances can vary, and the ECHA does not make any recommendations about what rating to use nor does it verify the accuracy of the information uploaded into the database. In addition, the inventory is constantly updated, so any users should frequently check back to see what if any new data has been inputted into the database.

HOW TO GET STARTED

Rest assured that compliance with GHS must be done. STLE member Dr. Eugene White, environmental, health and safety (EHS) consultant in Cincinnati, Ohio, clearly states that GHS compliance is mandatory. “My major concern at this point is some companies have not yet started the process even though June 1, 2015 is just around the corner,” White says. “Though GHS requirements are basically straightforward, they are comprehensive and it takes time to properly modify pre-GHS labels and convert MSDSs to the 16-section standardized SDS format. Whether these document changes are made by in-house EHS staff or outsourced to

GHS vendors, becoming GHS compliant is not an optional administrative item subject to laissez-faire consideration. Companies do not get a pass for trying to be regulatory compliant—either you are compliant or you are not!”

Suppose that your company has not started to comply with GHS. What three steps can you take to get started?

Howell focuses on determining resources needed, checking on label printer capabilities and focusing on a lubricant manufacturer’s top-selling products. He says, “Right away, begin to identify the resources required to do the job. Beginning this late in the game will require hiring new environmental, health and safety (EH&S) resources, diverting additional human resources to this effort or reassignments of other job responsibilities. Second, consider whether you will need to purchase or lease SDS software or hire a third-party contractor who has such software to prepare your SDSs. Third, after reading and thoroughly understanding 29 CFR 1910.1200, Appendix A, hand-classify the top 20 percent of products, which likely produce some 80 percent of your sales. That way, you can begin to understand the changes in labels and SDSs your customers will shortly be seeing.”

Carl Wainwright, Americas Product Stewardship Advisor, Global Product Integrity Systems for ExxonMobil Fuels, Lubricants & Specialties Marketing Co. in Paulsboro, N.J., suggests a systematic approach where information is first obtained on component ingredients, followed by analysis and implementation. He says, “In order to ensure that their GHS compliance activities are on track, a lubricant manufacturer would need to first obtain the GHS hazard classifications and SDSs for each of their component ingredients from each of their suppliers. The lubricant manufacturer will then need to assess the information received and determine the appropriate GHS classification and labeling requirements for their finished lubricant products. Finally, the lubricant manufacturer would need to implement a plan to update their SDS and product labeling, as well as working down inventory to minimize re-labeling, if needed.”

Mike Ogburn, eCAP® program development manager for Indianapolis-based August Mack Environmental, Inc., reminds companies that training needed to be done last year but still is important in getting started with GHS. He says, “Dec. 1, 2013, was the effective completion compliance deadline for training employees on the new label elements and the revised SDSs. This must still be done first because without the training, the pictograms and hazard statements will mean very little to someone on the production floor.”

Ogburn then suggests, if possible, that a base product be identified by the lubricant company as a basis for assigning appropriate hazard classifications. Finally, he says, “Establish constant communication with your suppliers and then dedicate within your company the resources needed to accomplish this task.”

CHALLENGES

No matter how much progress your company has made to date, there are still a number of challenges that will need to be dealt with along the way.

Example of Skin Irritation Using Additivity Approach

Calculations:

Category 1:

$\Sigma\% \text{Skin Category 1} \geq 5\%$
0.9% MEA = 0.9%

Category 2:

Category 1 ingredients:

$\Sigma\% \text{Skin Category 1} \geq 1\%$ but < 5%
0.9% MEA = 0.9%

Category 2 ingredients:

$\Sigma\% \text{Skin Category 2} \geq 10\%$
2.0% TEA + 4.0% Na Pet Sulf = 6.0%

Category 1 + Category 2 ingredients:

$\Sigma(10 \times (\Sigma\% \text{Skin Category 1})) + \Sigma\% \text{Skin Cat 2} \geq 10\%$
(10 x (0.9% MEA)) + 2.0 TEA + 4% Na Pet Sulf
= 15%

Category 1:

MEA *alone* does not meet criteria.

Category 2:

- MEA *alone* does not meet criteria

- TEA + Na Pet Sulf *together* do not meet criteria

- MEA + TEA + Na Pet Sulf *together* do meet criteria for Category 2 skin irritation

Figure 7 | The process for using the additivity method to determine the skin hazard category for a metalworking fluid containing specific concentrations of MEA, TEA and sodium petroleum sulfonate is shown. (Courtesy of GHS Resources, Inc.)

Supplier information. One of the most important issues is how to access information on components used in your products. This can be a particular challenge, especially for MWF companies that manufacture 100s of products, each of which may contain 20 substances.

Wainwright states that securing substance information for suppliers is a difficult process. He says, “OSHA has adopted a single-phase approach for substance and mixture GHS implementation, so substance manufacturers and finished lubricant manufacturers will have the same implementation deadline of June 1, 2015. This means that not all GHS information from substance suppliers may be readily available for lubricant manufacturers to assess in their own products in a timely fashion.”

In addressing how to persuade suppliers to share GHS-compliant labels and SDSs on their substances, Wainwright suggests developing a close relationship with suppliers and look for information from other sources.

He says, “Try to work directly with your supplier’s product safety departments. Most suppliers should have access to GHS hazard classifications of their products at this point. Send written requests to your suppliers and keep copies of these requests for documentation purposes.”

Other sources include the EU C&L Inventory Database discussed earlier in this article. Wainwright continues, “You can also consider the use of GHS SDSs from other countries or suppliers to see how others are classifying a given substance. The main risk to this is when your supplier does provide the GHS information for their product. You might need to update your SDS and labels if there are discrepancies or additional information.”

Ogburn suggests that an attempt should be made to use leverage with your supplier to facilitate receiving GHS compliant information in a timely manner. He says, “If you have a good relationship with your supplier (which usually means you are purchasing a lot from them), then you have some lever-



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age. No company wants to lose a good customer. So if you are important to your suppliers, they should be able to get you the data you need.”

Howell believes that applying pressure on suppliers is essential and all efforts should be documented. He says, “Lubricant manufacturers need to pressure their suppliers by any suitable means to get GHS-compliant SDSs into their hands, sooner rather than later. No matter which steps you take, writing letters, emails, phone calls, etc., document your efforts, as those documented steps may become important later.”

Suitable hardware and software. GHS-compliant SDSs and labels will need to be bicolor so that a black pictogram can be printed with a red diamond. Howell says, “SDSs software is virtually essential unless you have a small product line and market only within the U.S. In assessing your capabilities, review the label printers you have available to confirm that you can print red-bordered pictograms or can overprint preprinted, blank and red-bordered pictograms with black ink.”

Wainwright adds, “You may need to invest in new printers or start to purchase preprinted label stock. Alterna-

tively, you can source your SDSs and labels from a third-party vendor.”

On the matter of software packages, Howell believes that they are nearly essential if the manufacturer is marketing products internationally. He says, “Software packages certainly can assist a lubricant manufacturer if it markets in jurisdictions where other languages besides English are required or detailed. While OSHA had promised a Word template, which would be useful for such producers, indications are that such a template may not be ready for some time due to resource constraints at the agency.”

Caution is essential if you decide to purchase a GHS software package. Howell says, “If manufacturers have not used such software before, they should expect to spend a significant amount of time in training and how to effectively use the software.”

Ogburn provides his perspective on software packages. He says, “What we are hearing on the street is that software packages are expensive and the integration is complex. Most software packages are using a rule-based system to automatically generate hazard classes and statements and then placing the correct pictogram on the SDS.

To date, 90 percent of our clients that deal with software packages have been disappointed with the results and have faced significant cost overruns.”

Heinz Dobbertin, managing director for C.S.B. GmbH in Krefeld, Germany, believes that preparation of SDSs and labels cannot be done without the correct software. He says, “People should be very careful about which software is chosen and be particularly cautious as to the process used to update SDSs and labels is handled.”

Relabeling. Once you feel that you have developed SDSs and labels for all of your products, do not forget about existing inventory that has not been sold by June 1, 2015. Wainwright says, “Another important hurdle that needs to be addressed is relabeling finished product already packaged at your facility that does not meet GHS requirements. Relabeling or repackaging could be quite labor intensive and costly. Manufacturers and distributors will need to weigh these costs versus writing off existing inventory that does not have GHS-compliant labels.”

EMPLOYEE TRAINING

Training was covered as an important issue in the March 2013 TLT article, which was written before OSHA’s required deadline for training on Dec. 1, 2013. Since training has been accomplished, the question is asked about whether it is important to continue training.

STLE member Dave Morrison, HSE specialist for Castrol Industrial North America in Naperville, Ill., said in the March 2013 TLT article that the timing between GHS implementation and training was too long. He says, “This issue remains a concern for us. As an experience trainer, there are many instances where I ask a class a question regarding recent training that I know they have had. At least half the class cannot remember taking it. So I know based upon that experience that employees looking at SDSs will not remember their OSHA training. Even so, many parts of the SDS are self-explanatory. However, even with the OSHA

training there may be parts of the SDS that require the interpretation of a safety professional.”

All of those interviewed agree that repeat training is essential. White says, “It does not hurt to provide refresher education to reinforce prior knowledge and clarify key learning elements. OSHA provides user-friendly GHS educational materials with explanations of labels, pictograms, SDS sections, signal words, hazard statements and precautionary statements.”

Howell adds, “Just as important, lubricant manufacturers should assist their customers with their training responsibilities by sharing with them new lubricant product labels and SDSs before they are formally published. That way, you can work with your key customers and address any concerns that they might have about your product labels and SDSs before they actually arrive on the customer’s shipping dock and are placed in the supply room.”

Ogburn advises that continuing training is a must because at last one very important concept is still not understood. He says, “Right now having employees differentiate between the signal words *DANGER* and *WARNING* seems to be a sticking point. Do your employees know and fully understand the difference between these two terms?”

Wainwright says, “OSHA Hazard Communication training needs to be done for all new employees who handle hazardous substances, and it is beneficial to include GHS refresher training for employees before/during your company’s GHS implementation.”

MWF PERSPECTIVE

With the complexity of most MWFs, there are additional issues that need to be dealt with due to the large number and different types of chemical substances used.

Morrison says, “Currently, customers are asking for updated SDSs just to be in compliance, without regard to what has or may have changed. Even so, not many SDSs have been released to the metalworking fluid end-user yet. When they do start to flow, it will take

some time for people to realize that some of the warnings have changed. In the early stages, companies are just collecting SDSs and not likely examining them for changes.”

In reviewing the large number of additives, the question was asked about which key raw material types may be more difficult for the MWF suppliers to deal with in developing GHS-compliant SDSs and labels. White says, “I stand by my comments from the initial article that corrosive chemicals and biocides are the two raw material categories that should be scrutinized carefully. Both of these additive types can have acute health effects if not utilized properly. Metalworking fluid suppliers will need to use GHS guidelines for SDSs and labels to provide adequate information to end-users.”

Morrison feels that those components such as salts that are formed as the fluid is prepared warrant attention. He says, “Those formulations with salts or other reaction products whose base components have greater health concerns than their reaction products need to be carefully evaluated because there is limited to no information on some of these substances.”

Morrison continues by expressing what needs to be done to gain a better understanding of these substances. He says, “Testing salts and reaction products is the only answer if we wish to continue using them. The cost involved in testing may limit the number of options available to the metalworking fluid formulator in the future.”

White sees communication between raw material suppliers and MWF manufacturers as critical in gaining a better understanding of how to work with corrosive chemicals and biocides. “Accurate information on these substances can be provided only if raw material suppliers and metalworking fluid manufacturers have a good relationship. Through educational activities that some suppliers offer and through the efforts of organizations such as ILMA and STLE, much valuable information about product components is disseminated throughout the industry,” White

says. “For matters of confidential information on certain raw materials, GHS has instituted guidelines to help both raw material suppliers and metalworking fluid manufacturers.”

Howell details the changes in how trade secrecy is dealt with under GHS. “There have been no changes in the trade secret provisions between HazCom 1994 and HazCom 2012 as described in Appendix E. What has changed is the default requirement of what should be disclosed in Section 3 of the SDS,” Howell says. “Previously, manufacturers needed to disclose just those components that have an OSHA Permissible Exposure Limit (PEL), an ACGIH Threshold Limit Value (TLV), those which appear on one of several lists of carcinogens or other chemical lists, which contributed to the product’s hazards. Under HazCom 2012 (see Appendix D, Table D.1) manufacturers must list, for mixtures, the chemical name, common names and synonyms, CAS number and other unique identifiers, the exact concentration of all ingredients, which are themselves classified as health hazards and which are present above their concentration/cut-off limits or which present a health risk below the cut-off/concentration limit. When a trade secret is claimed in accordance with paragraph (i) of 29 CFR 1910.1200, a statement that the specific chemical identity and or exact percentage (concentration) of composition has been withheld as a trade secret is required.”

Howell continues, “Manufacturers should understand that the trade secret provisions are different in the United States than in other jurisdictions and that either registration of the trade secret with a competent authority or more disclosure elsewhere may be required.”

Ogburn believes that providing reasons for claiming trade secrecy must be clearly documented. He says, “The best course of action is to fully document how and why disclosing trade secrecy information on the SDS will harm business interest.”

With uncertainty about certain



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chemical substances, this raises the issue of whether it will be necessary to reformulate products. Morrison says, “At this time, there is very little to no pressure on metalworking fluid manufacturers to reformulate. In actuality, the pressure to change the composition of a fluid will be indirect because the SDSs will determine if a fluid will sell in the marketplace. If the fluid fails due to its SDS, then the manufacturer will be faced with the decision to do testing (if it promises to improve the product’s rating), reformulate or discontinue the product.”

White says, “The metalworking fluid industry as a whole has been proactive over the years in modifying the chemistries of certain products in response to compelling data from health and safety research sources. At this time, manufacturers may be compelled to reformulate, if necessary.”

Howell sees reformulation efforts as being underway but limited. He stresses the value of testing the eye and skin irritation of specific MWFs. “Metalworking fluid manufacturers

are finding that products marketed as “mild to the hands” are, in fact, classified, according to the criteria in Appendix A, as a Category 1 eye corrosive and perhaps as a Category 1 skin corrosive,” Howell says. “In truth, the products may not possess the corrosive hazards that are listed in the Appendix A classifications. In those cases, actual product testing for eye and skin irritation can be an alternative to reformulation and, in the long run, costly. But remember that actual testing data, if available, must be used in place of the procedures described in Appendix A.”

DELAYING THE GHS DEADLINE

The concern with not having adequate information from raw material suppliers is prompting efforts by the lubricant industry to persuade OSHA to delay GHS implementation. Wainwright says, “ILMA has recently petitioned OSHA because of delays in receiving raw material information from suppliers. While it can be difficult to predict the outcome of these efforts, it is unlikely that OSHA will be willing to

make changes so close to the implementation deadline. Although U.S. GHS implementation is being done in a single phase for substances and mixtures, OSHA may take the view that industry has had more than three years to prepare.”

With no assurance there will be a delay in GHS implementation, Howell reveals that ILMA has asked for more support from OSHA. He says, “ILMA has suggested that for those lubricant manufacturers who are making good-faith efforts to classify products and prepare GHS-complaint SDSs and labels that if the SDS and labels for certain products for which upstream component SDSs have not been received in a timely manner, that OSHA not cite such manufactures for not having all of those finished product SDSs complete if an inspection were to occur after June 1, 2015. ILMA has suggested a six-month window to complete those finished product SDSs and labels.”

Howell indicated that not only ILMA but the American Coating Association, in a letter co-signed by eight other associations, also has petitioned OSHA seeking temporary relief from the deadline.

In a late breaking development, OSHA has responded to the American Coating Association after a meeting with this organization and ILMA last October. Howell says, “OSHA did not agree to extend the deadline for implementation of GHS in the U.S.”

Howell shared the following information from a letter that Dr. David Michaels, assistant secretary of labor for occupational health and safety, wrote in response to J. Andrew Doyle, president of the American Coating Association.

Howell indicated that Dr. Michaels wrote, “OSHA is able to use its enforcement discretion when the compliance staff consider whether formulators and manufacturers have performed their due diligence and made good faith efforts to obtain necessary information to comply with the June 1, 2015 deadline. Manufacturers and formulators should therefore document all efforts to alternatively obtain the required

information; such as attempts to contact their supplier to obtain the proper information; reasonable efforts to find alternate suppliers who could provide timely and accurate classification; and reasonable efforts to find relevant data themselves.”

EU PERSPECTIVE

Dobbertin comments on the continuing challenge to complying with GHS, not just in the EU but in other parts of the world. He says, “Classification of many substances are different in the various countries, labeling is handled differently and which modules of GHS have been implemented is also different. This leads to the fact that in each country, the responsible party for first introduction of a substance/mixture/product has to check if the country of their supplier is using the same modules and if there are different classifications for the substance.”

Dobbertin points out that the need to follow this step is in direct contradiction to the objective of GHS.

At this time in the EU, raw material suppliers have issued SDSs with the CLP classification. The challenge then is to accurately prepare SDSs for lubricants and other mixtures, which is also due on June 1, 2015.

Dobbertin says, “The SDSs prepared by raw material suppliers now show more severe elements (especially in the field of irritation/corrosion), and that needs a lot of explanation as their customers do not understand why the same product all of a sudden shows the corrosion symbol instead of an irritation symbol.”

Dobbertin predicts that as the June 1, 2015 deadline approaches, lubricant manufacturers in the EU will face a very similar problem to lubricant manufacturers in the U.S.

Another issue that anyone doing business in the EU must be aware of is how to not just be in compliance with GHS but also with REACH. Details on REACH were provided in a previous TLT article.⁶

Dobbertin sees two issues that need to be overcome as lubricant suppliers

need to comply with GHS but also remain in compliance with REACH. “Problems can occur when individual registration dossiers are filed for REACH that contain different GHS classifications for the same chemical substance,” he says. “The EU has also asked for extended SDSs, which differ from SDSs, in that they contain at least one exposure scenario for a chemical substance or a mixture such as a lubricant during its operating life. Transferring information from one extended SDS to another is extremely time consuming, as the process can take as long as 18 hours for one SDS. There needs to be a way to make the process more efficient.”

Finally, Dobbertin points out that the last tonnage band (1-10 metric tons) for REACH registration is coming up at the end of May 2018. He says, “Discussions are going on to increase the requirements for this registration, which will increase the cost, and there is a strong possibility that the EU will require polymers to be included in registrations in the near future.”

STLE Webinar Alert

For a more in-depth overview about GHS, including a look at metalworking fluid regulatory trends in the EU, check out the STLE Webinar: “Boric Acid and Other EU Metalworking Fluid Regulatory Trends,” presented by Dr. Neil Canter. Archive recording available for purchase at the STLE store. Details at www.stle.org.

Dobbertin cautions that companies will need to decide whether to register chemical substances by the middle of 2016 because there will be an increase in demand to register approximately 20,000 to 25,000 substances from that time until the deadline. Undoubtedly, delays will occur in the registration system, leading to the possibility that a supplier might not be able to register a substance in time and, therefore, be unable to continue to market it to the EU.”

RESOURCES

Two resources to use through the process of complying with GHS are the Hazard Communication section of the OSHA Website (<http://www.osha.gov/dsg/hazcom/index.html>) and the European Chemicals Agency (ECHA), Classification & Labeling (C&L) Inventory Database (<http://echa.europa.eu/information-on-chemicals>).

Howell says, "Remember to continue to try to obtain GHS-compliant SDSs from your upstream suppliers. It is imperative that lubricant manufacturers document their requests for GHS-compliant SDSs. Become familiar with the ECHA C&L database, as that can serve as an alternative source for component classification information."

Time is running short as there are fewer than six months to go until GHS is implemented in the EU and the U.S. for lubricants.

Please use all the resources listed plus the suggestions outlined by those interviewed in this article. While this may not ensure that the transition will go smoothly, you will be equipped with the needed information to make it happen.

Good luck! **TLT**



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