GHS

INCIDENT

No industry or business is automatically exempt from chemical exposure, and some of the most frightening incidents take place where we least expect them – in no small part because it's where we least expect them.

For instance, every year there are a slew of chemical incidents in schools and at colleges that force the evacuation of student and faculty, often after a life threatening exposure has occurred.

This month, ABC News reported on two stories of customers at restaurants ingesting hazardous chemicals after employees unknowingly served contaminated beverages. The most recent incident took place at a fast food restaurant, where an employee served vanilla shakes tainted with a cleaning chemical to several customers.

According to the ABC report, "the mistake occurred when one employee left a container with chemical cleaner in the sink and then another employee later filled that container with vanilla syrup, thinking the container was clean." The New York Daily News clarifies that a vanilla bottle had been in the sink when degreaser was poured into the sink, contaminating the bottle. Another employee took the bottle, thinking it was clean, refilled it with syrup and put it out for use.

Without knowing the specifics, it appears as though this accident was caused by a breakdown on many fronts, particularly on the employee training side. The business basically said as much by responding to the incident with news that employees would be undergoing additional training. Even if a company only has one hazardous chemical in the workplace, it should command the appropriate respect, as this case illustrates, because the consequences are too deplorable – and are downright bad for business.

The second incident in the news took place at a restaurant in Utah

where a woman was served tea tainted with lye. According to the report, “An employee mistook degreaser – made up of sodium hydroxide, or lye – for sugar, mixing it into the tea and causing extreme burns to [the customer’s] throat and mouth.”

Making the matter worse, it was the second time this summer that lye was mistaken for sugar at the restaurant. An employee burned her tongue after testing the substance which was apparently stored in a sugar container. The lawyer for the injured customers stated, “To me it means that the company was on notice that there was a hazardous substance that wasn’t properly labeled, that wasn’t properly controlled…And that things should have and could have been done to prevent my client…from being injured.”

NEED TO KNOW

What is the Globally Harmonized System (GHS)?

GHS stands for the Globally Harmonized System of Classification and Labelling of Chemicals. GHS defines and classifies the hazards of chemical products, and communicates health and safety information on labels and safety data sheets). The goal is that the same set of rules for classifying hazards, and the same format and content for labels and safety data sheets (SDS) will be adopted and used around the world. An international team of hazard communication experts developed GHS.

The global GHS, as developed by the United Nations. GHS is a ‘non-binding’ system of hazard communication. Only the elements of GHS that have been explicitly adopted by Canadian legislation are enforceable.

Why is global harmonization necessary?

Currently many different countries have different systems for classification and labelling of chemical products. In addition, several different systems can exist even within the same country. This situation has been expensive for governments to regulate and enforce, costly for companies who have to comply with many different systems, and confusing for workers who need to

understand the hazards of a chemical in order to work safely.

GHS promises to deliver several distinct benefits. Among them are:

- Promoting regulatory efficiency.
- Facilitating trade.
- Easing compliance.
- Reducing costs.
- Providing improved, consistent hazard information.
- Encouraging the safe transport, handling and use of chemicals.
- Promoting better emergency response to chemical incidents.
- Reducing the need for animal testing.

What is the scope of GHS?

GHS covers all hazardous chemicals and may be adopted to cover chemicals in the workplace, transport, consumer products, pesticides and pharmaceuticals. The target audiences for GHS include workers, transport workers, emergency responders and consumers.

What are the two major elements in GHS?

The two major elements of GHS are:

1. Classification of the hazards of chemicals according to the GHS rules.

GHS provides guidance on classifying pure chemicals and mixtures according to its criteria or rules.

2. Communication of the hazards and precautionary information using Safety Data Sheets and labels:

Labels – With the GHS, certain information will appear on the label. For example, the chemical identity may be required. Standardized hazard statements, signal words and symbols will appear on the label according to the classification of that chemical or mixture. Precautionary statements may also be required, if adopted by your regulatory authority.

Safety Data Sheets (SDS) – The GHS SDS has 16 sections in a set order, and minimum information is prescribed.

What are some key terms in the GHS Vocabulary?

- **SDS**– Safety Data Sheet. SDS is the term used by GHS for Material Safety Data Sheet (MSDS).
- **Hazard group**– While not given a formal definition, GHS divides hazards into three major groups – health, physical and environmental.
- **Class**– Class is the term used to describe the different types of hazards. For example, Gases under Pressure is an example of a class in the physical hazards group.
- **Category**– Category is the name used to describe the sub-sections of classes. For example, Self-Reactive Chemicals have 7 categories. Each category has rules or criteria to determine what chemicals are assigned to that category. Categories are assigned numbers (or letters) with category 1 (or A) being the most hazardous.
- **Hazard Statement**– For each category of a class, a standardized statement is used to describe the hazard. For example, the hazard statement for chemicals which meet the criteria for the class Self-heating substances and mixtures, Category 1 is Self-heating; may catch fire. This hazard statement would appear both on the label and on the SDS.
- **Precautionary Statement**– These statements are standardized phrases that describe the recommended steps to be taken to minimize or prevent adverse effects from exposure to or resulting from improper handling or storage of a hazardous product.
- **Signal word** – There are two signal words used by the GHS – Danger and Warning. These signal words are used to communicate the level of hazard on both the label and the SDS. The appropriate signal word to use is set out by the classification system. For example, the signal word for Self-heating substances and mixtures, Category 1 is Danger while Warning is used for the less serious Category 2. There

are categories where no signal word is used.
- **Pictogram**– Pictogram refers to the GHS symbol on the label and SDS. Not all categories have a symbol associated with them.

What is meant by the GHS hazard groupings and building block concept?

There are three major hazard groups:

- Physical hazards.
- Health hazards.
- Environmental hazards.

Within each of these hazard groups there are classes and categories. Each of these parts is called a building block. Each country can determine which building blocks of the GHS it will use in their different sectors (workplace, transportation, consumers). Once the building blocks are chosen, the corresponding GHS rules for classification and labels must be used.

What are the classes within the Health hazard group?

Criteria for classifying chemicals have been developed for the following health hazard classes:

- Acute toxicity.
- Skin corrosion/irritation.
- Serious eye damage/eye irritation.
- Respiratory or skin sensitization.
- Germ cell mutagenicity.
- Reproductive toxicity.
- Specific target organ toxicity – single exposure.
- Specific target organ toxicity – repeated exposure.
- Aspiration hazard.

What are the classes within the Physical

hazard group?

Criteria for classifying chemicals have been developed for the following physical hazard classes:

- Flammable gases.
- Oxidizing gases.
- Gases under pressure.
- Flammable liquids.
- Flammable solids.
- Self-reactive substances and mixtures.
- Pyrophoric liquids.
- Pyrophoric solids.
- Self-heating substances and mixtures.
- Substances and mixtures which, in contact with water, emit flammable gases.
- Oxidizing liquids.
- Oxidizing solids.
- Organic peroxides.
- Corrosive to metals.

What are the classes within the Environmental hazard group?

Criteria for classifying chemicals have been developed for the following environmental hazard classes:

- Hazardous to the aquatic environment (acute and chronic).
- Hazardous to the ozone layer.

Where can I get information on the GHS criteria for the different hazard classes?

The most current information on GHS classification, labels and SDS as well as other criteria is available in the **5th revised edition** of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)from the United Nations Economic Commission for Europe (UNECE).

GHS is a dynamic system. The international GHS committee meets

twice a year to work on developing potential new hazard classes as well as resolving specific issues, and updating the latest GHS publication. Check the above link for more information.

What is the target date for implementation of GHS?

Countries and sectors (consumer, environmental, workplace, transportation) within a country will implement GHS at varying times depending on their local circumstances.

BUSINESS/REGULATION

Overall, the current roles and responsibilities for suppliers, employers and workers have not changed in WHMIS 2015.

Suppliers, Importers and Producers duties continue to include:

- Classifying hazardous products.
- Preparing labels and SDSs.
- Providing these elements to customers.

Employers must continue to:

1. Educate and train workers on the hazards and safe use of products.
2. Ensure that hazardous materials are properly labelled.
3. Prepare workplace labels and SDSs as necessary.
4. Provide access for workers to up-to-date SDSs.
5. Ensure appropriate control measures are in place to protect the health and safety of workers.

Workers still must:

- Participate in WHMIS and chemical safety training programs.
- Take necessary steps to protect themselves and their coworkers.
- Participate in identifying and controlling hazards.

Canada

The *Hazardous Products Regulations* were published in *Canada Gazette*, Part II on February 11, 2015. Both the amended *Hazardous*

Products Act and new regulations are currently in force. "In force" means that suppliers may begin to use and follow the new requirements for labels and SDSs for hazardous products sold, distributed, or imported into Canada.

Note that the provincial, federal, and territorial occupational health and safety WHMIS regulations will also require updating.

A multi-year transition plan has been announced. From now until May 31, 2017 suppliers (manufacturers and importers) can use WHMIS 1988 **or** WHMIS 2015 to classify and communicate the hazards of their products (suppliers must use one system **or** the other). Beginning June 1, 2017 to May 31, 2018, distributors and suppliers importing for their own use can continue to use WHMIS 1988 or WHMIS 2015.

United States

Final Rule became effective May 26, 2012. Key dates in the US implementation include:

- December 1, 2013 – Train employees on the new label elements and SDS format.
- June 1, 2015 – Comply with all modified provisions of the final rule, except December 1, 2015 – Distributors may ship products labelled by manufacturers under the old system until December 1, 2015.
- June 1, 2016 – Update alternative workplace labelling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.
- Transition Period – Comply with either 29 CFR 1910.1200, or the current standard, or both.

STATISTICS

- Chemical exposure is a serious risk that many workers face on a daily basis. According to the S. Bureau of Labor Statistics, exposure to harmful substances or environments is among the five most common causes of workplace fatalities. Nearly 10 percent of all workers who lose their

lives due to occupational illnesses or injuries die as a result of chemical exposure. This amounts to an estimated 60,000 deaths– which is on top of the roughly 860,000 illnesses resulting from chemical exposure in the workplace every year.

- While some exposures can result in immediate injuries (such as chemical burns), in many cases, exposure takes its toll over time. In fact, even relatively modest chemical exposures, if repeated over the course of years and years of employment, can lead to life-changing medical conditions.

PREVENTION

Read the MSDS for each chemical before you use it for the first time. Review it as needed. Your company will have written material safety data sheets on file. These MSDSs can also be accessed on the internet. Follow the directions for use, handling and disposal of the chemicals. Make sure you are aware of what to do in case of a spill or other emergency.

1. **THE HAZCOM PROGRAM**

Your company should have a complete and comprehensive HAZCOM program. The program should be in writing and should include: a determination of the hazards presented in your company, labeling of all chemical containers, training about the hazardous chemicals, an inventory of all of the hazardous chemicals, and material safety data sheets. The program should also cover tasks that involve chemicals, but that are not routine.

2. **INFORMING EMPLOYEES**

The employer must inform its employees of the hazards of the chemicals they use. This is done by training new employees or whenever new chemicals are brought in for use. Training should be repeated periodically. Other ways of informing employees about

hazards include material safety data sheets and labeling of containers that hold chemicals.

3. **IF MEDICAL ADVICE IS NEEDED, HAVE PRODUCT CONTAINER OR LABEL AT HAND.**

P102: Keep out of reach of children.

P103: Read label before use.

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P210: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P211: Do not spray on an open flame or other ignition source.

P220: Keep/Store away from clothing/…/combustible materials.

P221: Take any precaution to avoid mixing with combustibles…

P222: Do not allow contact with air.

P223: Keep away from any possible contact with water, because of violent reaction and possible flash fire.

P230: Keep wetted with…

P231: Handle under inert gas.

P232: Protect from moisture.

P233: Keep container tightly closed.

P234: Keep only in original container.

P235: Keep cool.

P240: Ground/bond container and receiving equipment.

P241: Use explosion-proof electrical/ventilating/lighting/…/equipment.

P242: Use only non-sparking tools.

P243: Take precautionary measures against static discharge.

P244: Keep reduction valves free from grease and oil.

P250: Do not subject to grinding/shock/…/friction.

P251: Pressurized container: Do not pierce or burn, even after use.

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

P261: Avoid breathing dust/fume/gas/mist/vapours/spray.

P262: Do not get in eyes, on skin, or on clothing.

P263: Avoid contact during pregnancy/while nursing.

P264: Wash thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P271: Use only outdoors or in a well-ventilated area.

P272: Contaminated work clothing should not be allowed out of the workplace.

P273: Avoid release to the environment.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P281: Use personal protective equipment as required.

P282: Wear cold insulating gloves/face shield/eye protection.

P283: Wear fire/flame resistant/retardant clothing.

P284: Wear respiratory protection.

P285: In case of inadequate ventilation wear respiratory

protection.

P231 + P232: Handle under inert gas. Protect from moisture.

P235 + P410: Keep cool. Protect from sunlight.

P301: IF SWALLOWED:

P302: IF ON SKIN:

P303: IF ON SKIN (or hair):

P304: IF INHALED:

P305: IF IN EYES:

P306: IF ON CLOTHING:

P307: IF exposed:

P308: IF exposed or concerned:

P309: IF exposed or if you feel unwell:

P310: Immediately call a POISON CENTER or doctor/physician.

P311: Call a POISON CENTER or doctor/physician.

P312: Call a POISON CENTER or doctor/physician if you feel unwell.

P313: Get medical advice/attention.

P314: Get medical advice/attention if you feel unwell.

P315: Get immediate medical advice/attention.

P320: Specific treatment is urgent (see … on this label).

P321: Specific treatment (see … on this label).

P322: Specific measures (see … on this label).

P330: Rinse mouth.

P331: Do NOT induce vomiting.

P332: If skin irritation occurs:

P333: If skin irritation or rash occurs:

P334: Immerse in cool water/wrap in wet bandages.

P335: Brush off loose particles from skin.

P336: Thaw frosted parts with lukewarm water. Do no rub affected area.

P337: If eye irritation persists:

P338: Remove contact lenses, if present and easy to do. Continue rinsing.

P340: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P341: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

P342: If experiencing respiratory symptoms:

P350: Gently wash with plenty of soap and water.

P351: Rinse cautiously with water for several minutes.

P352: Wash with plenty of soap and water.

P353: Rinse skin with water/shower.

P360: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.

P361: Remove/Take off immediately all contaminated clothing.

P362: Take off contaminated clothing and wash before reuse.

P363: Wash contaminated clothing before reuse.

P370: In case of fire:

P371: In case of major fire and large quantities:

P372: Explosion risk in case of fire.

P373: DO NOT fight fire when fire reaches explosives.

P374: Fight fire with normal precautions from a reasonable distance.

P375: Fight fire remotely due to the risk of explosion.

P376: Stop leak if safe to do so.

P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P378: Use … for extinction.

P380: Evacuate area.

P381: Eliminate all ignition sources if safe to do so.

P390: Absorb spillage to prevent material damage.

P391: Collect spillage.

P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P301 + P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P301 +P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P302 + P334: IF ON SKIN: Immerse in cool water/wrap in wet bandages.

P302 + P350: IF ON SKIN: Gently wash with plenty of soap and water.

P302 + P352: IF ON SKIN: Wash with plenty of soap and water.

P303 + P361 + P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P304 + P341: IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P306 + P360: IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes.

P307 + P311: IF exposed: Call a POISON CENTER or doctor/physician.

P308 + P313: IF exposed or concerned: Get medical advice/attention.

P309 + P311: IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

P332 + P313: If skin irritation occurs: Get medical advice/attention.

P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.

P335 + P334: Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.

P337 + P313: If eye irritation persists: Get medical advice/attention.

P342 + P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

P370 + P376: In case of fire: Stop leak if safe to do so.

P370 + P378: In case of fire: Use … for extinction.

P370 + P380: In case of fire: Evacuate area.

P370 + P380 + P375: In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.

P371 + P380 + P375: In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

P401: Store …

P402: Store in a dry place.

P403: Store in a well-ventilated place.

P404: Store in a closed container.

P405: Store locked up.

P406: Store in corrosive resistant/… container with a resistant inner liner.

P407: Maintain air gap between stacks/pallets.

P410: Protect from sunlight.

P411: Store at temperatures not exceeding … oC/…oF.

P412: Do not expose to temperatures exceeding 50 oC/122oF.

P413: Store bulk masses greater than … kg/… lbs at temperatures not exceeding … oC/…oF.

P420: Store away from other materials.

P422: Store contents under…

P402 + P404: Store in a dry place. Store in a closed container.

P403 + P233: Store in a well-ventilated place. Keep container tightly closed.

P403 + P235: Store in a well-ventilated place. Keep cool.

P410 + P403: Protect from sunlight. Store in a well-ventilated place.

P410 + P412: Protect from sunlight. Do no expose to temperatures

exceeding 50 celcius degress.

P411 + P235: Store at temperatures not exceeding …Keep cool.