POSTER ABSTRACTS
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Regulatory list classifications vs classification based on reliable published data and implications for global SDS authoring

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The European Union, Turkey, Japan, China, Korea and Malaysia have published GHS-based classification lists. Publication of REACH registration dossiers and increased availability of a number of national hazard information databases has led to a rapid expansion of previously unpublished studies becoming readily available on the dissemination websites. Experienced hazard communication experts and toxicologists, self-classified 600+ substances that were found on at least one classification list using reliable published data and compared the list-based classification data to self-classifications. Environmental and human health endpoints were compared to see if they matched or were more or less severely classified. Several regions require the use of the list-based classification as mandatory minimum classifications or mandatory classifications. Given the significant differences in the self-classifications and list data, we examined the options for implementing the list-based classifications and how the data can be presented in safety data sheets (SDSs)to best reflect both the required classifications and available data. We also examined how precautionary sections of the SDS can be kept consistent, despite classification differences, for global SDS authoring.

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OEL: BEYOND THE OSHA'S LETTER OF INTERPRETATION (LOI)

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It is OSHA's prerogative to clarify their criteria for hazard classifications and communications. At times some of their clarifications appear puzzling and result in pseudo-understanding among hazard communicators and thus may be subject to further questionings. Occupational Exposure Limits (OEL) is not an exception. OSHA has received several questions as well as respectively provided answers to those queries by means of the so-called letter of interpretation (LOI). Here, by chronicle are a few examples of OSHA's various LOI or responses on occupational exposure limits (OEL) - PEL & ACGIH TLV: Aug 18, 1986; April 4, 2005; May 19, 2009; April 15, 2011; January 31, 2013; September 21, 2016. The bombardment of questions to OSHA regarding which ingredients with OEL should appear on SDS and OSHA's LOI further indicate that there are still confusions and conflicting understanding on this pertinent issue. This poster attempts to present an incisive approach to decrypt OSHA's letter of interpretation on the OEL of which ingredients merit disclosure in section 8 of the SDS.

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Can the European Union's Specific Concentration Limits for Skin Sensitization be used in the United States and Canada?

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The European Union (EU) has adopted a Specific Concentration Limit (SCL) for numerous chemicals that are considered potent skin sensitizers. Under the EU's Classification, Labeling and Packaging (CLP) of substances and mixtures guidance, extreme sensitizers can have an SCL that is lower than the generic concentration limit (GCL) for sub-category 1A. Values for the concentration may be set at 0.001% or an individual value based on reliable data. Therefore, a mixture may be classified as sensitizing if it contains a sensitizing substance at a concentration of at least one tenth of the generic/specific classification limit. This policy of adopting SCLs for potent sensitizers is not common in the United States or Canada. This poster presents relevant sections of the US and Canadian regulations and/or guidance documents that show when concentrations other than the GCL may be adopted for classification in the US and Canada. This poster also illustrates the value of a weight-of-evidence approach in the determination of a chemical's classification. Companies should develop their own best practices and recognize the importance of consistently executed these internal best practices with strong documentation.

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Occupational Exposure Limits—What if one hasn't been established?

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Occupational exposure limits (OELs) have a significant role in helping health and safety professionals determine if workers are being properly protected from exposure to hazardous materials in the workplace. OELs have been established throughout the world for thousands of substances, however what do you do whenever an OEL is not publicly available for a material? Without an OEL, it becomes challenging for health and safety professionals to assess if workers are operating in a safe environment and subsequently determine the appropriate engineering controls that need to be taken to ensure workers are properly protected. Deriving an OEL from scratch can be challenging without having all of the necessary data and expertise readily available. In this case, a great first resource for health and safety professionals is to utilize exposure banding to determine the exposure range a substance would fall into. This can be a useful first step to characterize the level of concern of exposure to a substance in the workplace and initiate risk management discussions regarding next steps or actions that need to take place. One notable exposure banding tool is the NIOSH Occupational Exposure banding process. This process offers a three-tiered system that allows users of various expertise to determine a baseline exposure range for a substance through qualitative, semi-quantitative, and expert judgement measures. Using data from nine toxicological endpoints, chemicals are grouped into one of five exposure bands ranging from high to low exposure. Tier one grouping is based on GHS hazard codes associated with the GHS classification of a substance. Where Tier two involves assigning exposure bans using point of departure data from reputable sources and Tier three uses expert judgement of a toxicologist to determine the proper band. This poster will present how exposure banding can be a useful tool for health and safety professionals and dive deeper into how the NIOSH Occupational Exposure banding process works.

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Implementing Annex VIII for EU Poison Centers

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EU Poison Centers receive and track information for hazardous mixtures in the European Union member states. They are contacted by an average of 1,700 physicians or product users every day for questions usually pertaining to accidental exposure. Currently the information that must be submitted to the EU Poison Centers, varies significantly between member countries. Through Annex VIII amendment to Regulation EC No 1272/2008, EU Poison Centers will now have a common way to submit and utilize chemical/product information. In addition, every product submitted to the Poison Control Centers will be given a Unique Formulation Identifier (UFI), a unique number printed on the product labeling that will allow the Poison Centers to quickly and easily identify the product's formula and hazards. As of January 1, 2020, Hazardous mixtures for consumer uses sold in the EU must be registered using the new procedure and have a UFI assigned and printed on the packaging. Across the EU, this process will harmonize chemical registering for the submitter and assist with responding appropriately in each country for those who utilize the poison centers. Annex VIII has specific information and implementation requirements for the submitting party, either industrial, professional, or consumer market, as well as set deadlines for them to meet. Companies that sell or import hazardous mixtures into the EU, need to be aware of this regulation, as changes to formulation tracking, labeling and integration with the EU UCLID database may be required.

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Recent approaches to communicating information about per-and polyfluoroalkyl substances (PFAS)

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Per-and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals including PFOA and PFOS which have been used in a number of applications such asfirefighting foams, stain repellents, and nonstick cookware. Federal, state, and local government agencies, as well as other public health organizations, are currently providing information related to PFAS exposures. We surveyed these communications to understand approaches currently being taken by these organizations to communicate information about health effects related to PFAS exposure. This poster presents patterns observed regarding the types of statements used in these communications.

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Respiratory Protection in Chemical Product Labels and Safety Data Sheets

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This poster discusses guidance from U.S. regulatory agencies and consensus standards regarding when and how to discuss respiratory protection in chemical product labels and/or safety data sheets. The context in which this information is often received, including the Occupational Safety and Health Administration's (OSHA's) "hierarchy of controls" for air contaminants and OSHA requirements for employer respiratory protection programs, is described. Context for chemical products regulated by other U.S. regulatory agencies is also discussed. As with other personal protective equipment (PPE), consideration of available guidance and consideration of the context in which the product may be used are important factors in deciding how prescriptive and how specific statements in a label or safety data sheet regarding respiratory protection should be. The potential disadvantages of being too prescriptive or too specific are discussed.

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Innovations in Workplace Labelling

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At Covestro LLC, an ACC Responsible Care Company, we have taken workplace labeling to a new level. While OSHA permits several options to convey hazard communication information for internal workplace labeling requirements, Covestro chose to go beyond the minimum. At our largest North American plant over 500 hundred unique reaction vessels or containers each housing various intermediate formulations required workplace labeling. Given the size of the production site and number of unique containers, using an approved OSHA alternative such as color coding, a numbering system, or production tickets is usually favored because of lower costs and quicker implementation time. However, when GHS was adopted by OSHA, plant safety personnel viewed this as an opportunity to further increase chemical safety awareness. Label creation was especially challenging as the complexity of these intermediates required verification from various departments of the site such as safety personnel, and production engineers. This poster will show how the information for these formulations was collected from the site and processed into over 500 custom GHS labels.

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Tamper Evident GHS Chemical Drum Labels and Seals Combat Diversion, Counterfeiting, and Tampering

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Chemical manufacturers and shippers are challenged by the frequency of counterfeit and tampered products. Containers of chemicals used for anything from pharmaceutical to industrial applications are often times tampered with along the supply chain. This disruption can cost manufacturers millions of dollars every year and the loss of consumer confidence. Product Stewardship and Supply Chain professionals are often charged with reviewing and identifying methods of eliminating products being counterfeited, diverted or tampered with throughout the supply chain.

BS5609 compliant secure printed tamper-evident labels and seals applied to chemical drums and containers can help combat these issues by providing un-erasable evidence of tampering while also verifying the authenticity of the product. This intelligence allows businesses to maintain and monitor the integrity of their products, determine expiration, and track products through the supply chain.

Tamper Evident Label positions can vary: over the flange/bung, over the edge of the lid, and even integrated into the general GHS Product labeling onto the side of the containers. These labels can have covert, overt, or a combination of both customized secure print features, making seals difficult or impossible to replicate by counterfeiters. The seals are designed to self-destruct upon removal.

In addition to the security features integrated into these products, track and trace capabilities are enabled using proprietary codes. This allows the drums/containers to be scanned by an optical device within the supply chain to verify drum location and authenticity. Integrating more than one authentication feature on a drum seal allows for deeper protection against theft and diversion and significantly improves a company's product integrity strategy. Coding methodology is flexible, utilizing human readable codes, QR or 2D barcodes, NFC, RFID, etc. or any combination of technologies depending on the product and tracking goals. With proper due diligence, chemical manufacturers can be confident they're utilizing the latest available technology to reduce and eliminate counterfeit products in the marketplace.

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Automation of Dangerous Goods Classifications through Machine Learning

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The classification of Dangerous Goods (DG) is a crucial step in SDS authoring which must be delegated to DG certified experts, whom navigate a complex classification structure with countless exceptions. Often, this is the rate limiting step for how quickly SDSs can be produced. At SAP we set out to find whether we could automate or enhance the process through the developing field of Machine Learning. Our project included learning user specific patterns, i.e. specific interpretation of the regulations by different DG experts, and company specific preferences.

By collecting and preparing data from over 22,000 products in varied industries, and training the Machine Learning Neural Network, we developed a reliable prediction model for DG classifications. The model can predict a result without being explicitly taught and communicate a confidence level. However, there are challenges to Machine Learning developments, due to the large quantities of classifications needed, limited feedback on the output results, and difficulties with training the model. This poster serves to present the results of our project and invites feedback from the chemical hazard communication community.