Poster Abstracts
SCHC Spring Meeting
Charleston, South Carolina
March 2014

Developing a Framework for the Quantitative Risk Characterization of Dermal Sensitizers in the Workplace

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Situation/Problem: The control or elimination of workplace exposure to dermal sensitizers is critical. Dermal exposure control strategies often incorporate a qualitative risk assessment process that links qualitative hazard and exposure assessments which is then used to determine appropriate control strategies. Because of the increased availability of quantitative hazard data for dermal sensitizers, a logical step to build on the qualitative risk assessment processes is seen as combining quantitative hazard and exposure data to give a quantitative risk characterization. It is envisioned that while the qualitative approach will still be widely used to initially identify workplace areas/tasks where exposure control is needed, quantitative risk characterization will be used to develop a more targeted control of workplace exposure to dermal sensitizers.

Resolution: Quantitative health hazard data for dermal sensitizers (*i.e.* potency data in the form of murine LLNA EC3 values) are obtained from the literature and ECHA's REACH registration database. ECHA methodology is used to transform EC3 values into dermal "benchmark" exposure concentrations that would not be expected to induce dermal sensitization in susceptible individuals. Obtaining quantitative, task-based dermal exposure estimates is more complicated, as well as more time and resource-consuming. Many methods exist for obtaining dermal exposure estimates such as dermal wipe sampling, dermal exposure models, worker biomonitoring, use of standard exposure equations, or a combination thereof.

Results: Benchmark exposure concentrations for known dermal sensitizers have been developed. However, calculation of quantitative dermal exposure estimates is still an on-going process and needs to be done on a task-based basis. The following is one such example: An initial qualitative assessment showed a potential for dermal risk from acrylate use in the workplace setting. A sensitization "benchmark" of 140 µg/cm^2 of skin surface area was derived for the chemical. Dermal exposure estimates (using conservative, Tier 1 modeling) for the task were 100 µg/cm^2 (with glove use) and 1000 µg/cm^2 (with no glove use). Because appropriate gloves were already being used in the task, and exposure was less than the benchmark, no further control measures were deemed necessary.

Lessons Learned: Qualitative exposure tools/processes will continue to be invaluable for reducing risk to dermal sensitizers in the workplace. A quantitative risk assessment approach has been shown to be feasible and able to be employed to validate results of the qualitative approach. However, quantitative risk assessment approaches are still in need of further development, especially in terms of exposure assessment.

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Small Package - Big Problem

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Current US/Canada GHS regulations provide no accommodation for fitting the large amount of GHS prescribed text and pictograms on smaller sized packages. Detailed review of GHS compliant labels shows that this will be a significant issue on packages 300ml or smaller.

Poster board will show the extent of the issue and quantify costs and solutions. Will demonstrate recommended solution based on European model and Health Canada pre-Gazette drafted proposal.

US/Canada need to define package-size-specific required GHS content to assure consistency and clarity of hazard level communication and appropriate worker protection

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Project Plan for Implementation of GHS: A Large Company Perspective

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The United Nation's Globally Harmonized System of Classification and Labeling of Chemicals (GHS) is being implemented in many countries around the world. This monumental task requires companies to identify hazards and classify materials according to the GHS framework. During a time when many companies are faced with implementing GHS in their global operations, the U.S. Occupational Safety and Health Administration (OSHA) updated the existing hazard communication standard. This standard, known as HazCom 2012, aligned OSHA's hazard communication standard with the GHS. This poster will present the approaches one company used to implement the GHS within the U.S. The poster will focus on the project plan used to complete this project within a company with multiple international business units. The project plan included scoping; regular communication; and development of people, processes, and tools. Each of these elements was important in delivering a successful HazCom 2012 implementation

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Stealth Expansion of GHS to Address Nanotechnology

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I would like to submit a poster illustrating the continuing problems that occur when a UN SCEGHS working group develops a proposed revision to the GHS without adequate opportunity to receive and act on public input. The specific example would be the recent revisions to the instructions for completing SDS to address combustible dust. The instructions (see material in red font below) were integrated into the GHS without reference to combustible dust and can now be interpreted to address the impact of changes in particle size that raise nanotechnology issues.

A4.3.7.1 ***Precautions for safe handling***

A4.3.7.1.1 Provide advice that:

(a) allows safe handling of the substance or mixture;

(b) prevents handling of incompatible substances or mixtures;

(c) draws attention to operations and conditions which create new risks by altering the properties of the substance or mixture, and to appropriate countermeasures; and

(d) minimizes the release of the substance or mixture to the environment.

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Facing the challenges in GHS classification: When the harmonized system is not so harmonized

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In reading out its full name, Globally Harmonized System of Classification and Labeling of Chemicals (GHS), we picture a perfect world in which classification and labeling for hazardous chemicals is unified across the globe. The truth is, as GHS is adopted by different regulatory authorities, there are many factors causing inconsistencies between the standards and regulations of different regions. From choosing which GHS building blocks should be implemented to interpreting the UN purple book, from adopting cut-off values to assigning the hazard classification level, there can be, and are, many variations. These variations can make the job of the hazard communicator complex, and confuse customers who imagine the system to be internationally harmonized after GHS adoption.

In this poster we present five examples of challenges we have faced while classifying according to GHS including the classification and labeling of a product needing to be revised in order to sell it in a different country, the GHS pictogram and transportation placard looking similar but having different meanings, and the GHS and transportation classifications not being in agreement. In sharing our issues as they arise, we hope that together we can meet the challenges GHS brings and mold it to what it was meant to be, a globally harmonized system.

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Managing Global GHS Labeling Challenges

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The framework of the Globally Harmonized System (GHS) provided by the United Nations was created with the intention to harmonize chemical hazard communication among all countries that choose to adopt and implement this system. While it has proven to simplify and harmonize hazard communication by unifying symbols, hazard statements, and precautionary statements that appear for a given classification between countries, one major challenge of the GHS lies in that classification differences may still be present among mixture classifications due to the "building block approach" outlined in its framework. This approach allows each country the flexibility of adopting different classifications, or "building blocks," along with the option of adopting different concentration cutoff thresholds for select hazard classifications. Thus, the same mixture may be classified differently if it is shipped and sold into multiple countries. In this poster, we provide label examples and discuss the potential classification differences associated with a single mixture.

Another concern in response to GHS implementation is the difficulty in applying a large amount of precautionary phrases prescribed by the GHS for multiple mixture classifications on product labels where space may be very limited. The European Chemicals Agency (ECHA) responded to this concern after the implementation of the Classification, Labeling, and Packaging (CLP) directive for substances in the European Union by issuing detailed guidance for providing a precedence for precautionary phrases on product labels to reduce confusion and conserve label space. This poster will also discuss the possibility of applying this reduced precautionary phrase guidance on a global scale.

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Value as the New Standard for Your EHS Program

Kathy Malone
Sr. Environmental Engineer, Solution Architect, CHMM

At a recent conference, Gartner presented the latest trends in Project and Portfolio Management. This poster would take EHS professionals through the shift that was presented in that talk.

Most companies are trying to increase their Maturity Model level, according to whatever system they are using. It is generally recognized that there is a chasm between the initial levels of maturity and the later ones.

As companies continue to press the issue of doing more with less, on time and within budget are no longer good enough.

Process is being replaced by Value as the standard by which projects are being judged, both with respect to whether to do the project in the first place, and whether the result was successful and yielded the value expected during and after.

Since there are never enough dollars for all the projects that need to get done, it may be that it's not that it's a bad project, its that other projects are more deserving of the funds.

The poster will present some examples of Value metrics for EHS activities, so that EHS professionals can get a vision of how they might implement a similar program in their culture.

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A Few Key Technology Innovations to Make Your EHS Program More Effective With Less Work:

Kathy Malone
Sr. Environmental Engineer, Solution Architect, CHMM

The goal of this poster session is to demonstrate to EHS professionals the power and ease of use of recently released technology tools, and to provide examples so they can visualize how these tools can be applied at their facilities and in their jobs. ("Power to the power user" is a re-emerging mantra in the software development world and the subject of keynotes at software developer conferences) .

The poster would show the raw data; the visually engaging end result; a count of the number of keystrokes to accomplish the end result; and a few words of explanation about the process for several of the examples listed below.

Case studies might include:

- Building a dashboard of EHS data from a spreadsheet
- Using Project Management tools to prioritize EHS projects based on user-created business values; adjusting which projects maximize the business value of the work if the budgets is cut; and demonstrating the ability to evaluate the effect of forcing favorite projects to stay in the portfolio.
- Graphing spreadsheet or database information onto rich visualizations, such as training requirements by department with green/yellow/red icons for how soon the employee's training needs to be refreshed.
- Video of data graphed over time with the size of the icon corresponding to the magnitude of the data, built from raw data.
- Integration between systems using drag and drop, point and click tools.

Examples use generic, out-of-box tools from the Microsoft suite of products, but any comparable tool is likely to have similar capabilities. Each solution presented is very few keystrokes from raw data to final product.