Podium Session 106
Socio-Legal and Regulatory Aspects of IH Practice
Monday, June 18, 2012, 2:00 PM – 4:40 PM
Papers CS-106-01 – SR-106-08

CS-106-01
GHS & Beyond: The Power of Positive Material Declaration
K. Kawar, Actio, Portsmouth, NH.

Situation/Problem: Requirements related to GHS, REACH, Product Stewardship, Green Chemistry and standards such as IPC 1752 mean that collected data must include multi-dimensional details including chemical names, types, quantities, geography and regulatory compliance status.

Resolution: The latest intelligence on how best to collect data for required reporting calls for something called "positive declaration." Seagate has been notably good at positive declaration in the past five years or so, but others are catching on. The best way is to get necessary ingredient data from suppliers is to ask direct questions. What’s in your product? What are the chemical ingredients, exactly? What processes did you use to make those? From that information it is a much simpler matter to get to GHS and SDS documents as well as other material disclosure documents.

Results: Material transparency processes will then exist for companies to manage change, reduce brand risk, handle inventory, manage quality control, and keep adequate business intelligence about products and a supply chain. Chemical-specific regulations and product labeling requirements will have substance-level disclosure from both upstream and downstream — and if the process of proactively gathering this data can be automated, all the better.

Lessons Learned: • Overcome “supplier fatigue” when it comes to filling out forms about chemical ingredients by having them do it once, as necessary.
  • Try to set the expectation that supplier data should be positive declaration rather than negative, because five years from now if the regulatory list changes (and it will!) you can still easily find out whether your products are compliant, without needing to re-engage the suppliers.
  • Lastly, don’t apply undue pressure on suppliers, as too much pressure can result in them hiding or pushing unseemly chemical ingredients far back into the supply chain, not report them to you, and cause damage down the road.

CS-106-02
Downstream User Obligations under REACH
R. Skoglund, 3M Company, St. Paul, MN.

Situation/Problem: REACH (Registration, Evaluation, Authorization and restriction of CHEmical substances), the European Union’s regulation on chemicals and their safe use, has significantly raised the prescriptive nature of the risk management responsibilities of downstream users of chemicals in the European Union. Under REACH, a downstream user of REACH-registered substances is responsible for ensuring that their uses and the risk management strategies they implement are within the boundaries of what the manufacturer or importer of the substance has registered. In addition, the downstream user is obligated to ensure that the relevant aspects of the risk management strategy are communicated down the supply chain as part of the REACH
extended Safety Data Sheet (eSDS). Compliance with this regulation presents a unique situation to the practicing industrial hygienist wherein there is a statutory obligation to implement a risk management strategy that fits within the boundaries of the strategy delineated by the registrant. In addition to fitting a risk management strategy within the boundaries of the registration, downstream users must also reconcile registered and intended uses, foster for the co-existence of REACH exposure and release limits with traditional limits, and manage the potentially redundant, incompatible, or even contradictory risk management strategies of multiple registered substances within a process or mixture.

**CS-106-03**  
**High Lead Levels Detected in Children's Toys, Jewelry and Hair Accessory Items Sold at Low-Priced Retailers**  
B. Sothert, Microecologies, Inc., New York, NY.  
**Situation/Problem:** In response to a request from Mt. Sinai School of Medicine, Microecologies first conducted a survey in 2008 to evaluate the lead content of toys, jewelry and hair accessory items intended for sale to children, and the survey was repeated in 2009 and 2010. Testing found that items sold in national chain stores and higher-priced stores did not contain significant levels of lead. However, in NYC were found to be alarmingly high. The 2010 survey that is being presenting was conducted in collaboration with EMSL laboratory and was reviewed by the NYC DOHMH prior to submission to the Consumer Products Safety Commission (CPSC).  
**Resolution:** For the 2010 Christmas season, approximately 50 toy and hair accessory items suspected to have elevated lead content were purchased from low-priced retailers in East Harlem and Jamaica, NY. Using an XRF instrument that displays lead concentration levels in ppm, 10 items were found to have highly elevated lead content. EMSL proceeded with laboratory analysis using CPSC stipulated atomic absorption (AA) methods and confirmed that these 10 items, all made in China, contained lead concentrations many times higher than current CPSC limits. The lead concentrations detected by XRF and AA were found to be remarkably similar.  
**Results:** We are currently working with the NYS Attorney General’s Office Environmental Protection Bureau in an attempt to assist them in intervening with the distribution and importation of items determined to be lead hazards.  
**Lessons Learned:** XRF technology is an effective method of screening that produces results verifiable by AA methods and can be effectively used in the field to identify and, with the help of authorities, remove high lead hazard items from retailers’ shelves.

**CS-106-04**  
**The Historical Understanding of the Sources, Risks and Regulation of Lead Exposure in New Jersey Prior to 1970**  
M. Holton, ENVIRON International Corp, Princeton, NJ.  
**Situation/Problem:** It is often perceived that once a substance is labeled as being harmful it will be regulated and controlled. However, this view is overly simplistic, particularly in the historical context. The issue is typically clouded by the need for substitute materials, competing risks and the public’s perception of risk. By analyzing information related to lead risks we can increase our understanding of the process by which recognition of hazard evolves into regulation.  
**Resolution:** A series of Annual Reports of the New Jersey Department of Health (NJDOH) from 1877 to 1970 were identified. The NJDOH commonly investigated workplace and community exposures and used the annual reports to distribute this information to the public. Lead exposures were investigated by the NJDOH as early as the first report. A systematic review of the annual reports was performed with an emphasis on the sections discussing suspected lead exposures and illnesses. The extracted information was then compared to global perspectives of risk to understand the drivers for regulation development and the control of lead exposures.  
**Results:** Although the NJDOH understood the risks and potential sources of lead exposure in their earliest reports, regulation developed slowly. Reasons for delay in regulation included a lack of substitute materials and a failure to recognize the risks of lower levels of exposure. Further, the risks associated with contaminated water supplies were considered more significant than those of lead in the water delivery system.  
**Lessons Learned:** This study suggests that despite an understanding that lead exposure was hazardous, concerns about competing risks, availability of substitute materials and a
misperception of the risks caused a delay in the regulation of lead exposure. Further review of other hazardous materials and similar documents by other state DOHs would enhance the understanding of the development of regulation and historical perceptions of risk.

**CS-106-05**

*The NIOSH Draft Criteria Document on Occupational Exposure to Diacetyl and 2,3-Pentanedione – An Update*

L. McKernan, CDC/NIOSH, Cincinnati, OH.

**Situation/Problem:** Diacetyl is used extensively in the flavoring and food production industry, and occupational exposure to this substance has been associated with severe obstructive lung disease, bronchiolitis obliterans, and decrease in lung function. 2,3-Pentanedione has been used as a substitute for diacetyl and is of concern because of structural similarities with diacetyl and because of animal studies showing similar pathology as seen with diacetyl in exposed animals and workers. Despite these detrimental effects, there are currently no federal occupational exposure limits for diacetyl or diacetyl substitutes.

**Resolution:** A multidisciplinary NIOSH team completed a comprehensive review of scientific literature and data sets related to diacetyl and 2,3-pentanedione. NIOSH conducted analyses to determine the exposure-response relationship and identify risk of pulmonary function decrease at various levels of diacetyl exposure. NIOSH found that a relationship exists between diacetyl exposures and lower pulmonary function. In August 2011, NIOSH released a draft Criteria Document proposing an 8-hr TWA Recommended Exposure Limit of 5 parts per billion (ppb) for diacetyl and 9.3 ppb for 2,3-pentanedione. To further protect against effects of short-term exposures, NIOSH recommended a short-term exposure limit (STEL) of 25 ppb for diacetyl and 31 ppb for 2,3-pentanedione.

**Results:** NIOSH hosted a public meeting and opened a docket for 60 days to accept comments from stakeholders and peer reviewers on the draft document. NIOSH then analyzed the public and peer review comments and synthesized them by category, pertaining to risk assessment, engineering controls, personal protective equipment, exposure assessment and medical guidance. Several succinct themes emerged from public comments pertaining to hazard communication issues, mixed exposure environments, dermal exposures, and risk assessment strategies.

**Lessons Learned:** Stakeholder and peer review responses provided valuable input to strengthen and refine the draft NIOSH criteria document on diacetyl and 2,3-pentanodione.

**CS-106-06**

*Development and Validation of an International Safe Work Practice*

F. Boelter, J. Persky, ENVIRON, Chicago, IL; S. Bullock, ENVIRON, Leeds, U.K.

**Situation/Problem:** Develop and validate a maintenance activity Safe Work Practice (SWP) and a technician training program that can meet the asbestos regulations in some 50 countries internationally.

**Resolution:** The project was undertaken as a result of questions regarding the handling of asbestos-containing gaskets during maintenance activities in various countries worldwide. Regulations were compiled, the gaskets and applications of interest were identified, and specific studies were conducted to gather data regarding airborne concentrations. Field studies were conducted in Singapore, the UAE, and Australia as well as chamber studies in the US. Full time equipment technicians were used in the studies. Multiple day personal BZ 8-hr TWA and 30-min STEL as well as area samples were collected and analyzed by NIOSH7400 and NIOSH7402).

**Results:** Much of the data collected showed airborne concentrations of asbestos (chrysotile) were less than limits of quantification. The average of all personal 8-hr TWA samples was <0.01 f/cc PCME. The average of all personal 30-min STELs samples was < 0.045 f/cc PCME. Analysis of worldwide asbestos regulations demonstrated a reasonably consistent language regarding deminimis airborne asbestos air exposure and an exemption for small scale projects in particular where fibers are bonded in a non-friable matrix. The time/activity information gathered allowed for the development of training programs and compliance packages for first hand as well as third party vendors.

**Lessons Learned:** Developing valid data to support multinational programs can be challenging where there is variability in
perceptions, technology, and attitudes in all stakeholders. Subtle differences in regulatory definitions or the lack of specificity in terminology can potentially limit the usefulness of valid data. In the end, regulators, employees, and third party vendors were receptive to the training and underlying scientific information.

**CS-106-07**  
**Industrial Hygiene Behind Bars**  
D. Krupinski, NIST, Boulder, CO.  

**Situation/Problem:** Developing, implementing, and maintaining an effective environmental and occupational health (EOH) program is challenging – more so in a prison factory environment.  

**Resolution:** This paper highlights the specific challenges and successes of working as the first EOH professional within the Federal prison industry system.  

**Results:** This presentation will also provide valuable insights on what you should and shouldn’t do when attempting to develop and implement EOH programs.  

**Lessons Learned:** This paper underscores the importance of understanding the resources needed to develop, implement, and maintain effective EOH programs.

**SR-106-08**  
**Are Occupational Psychosocial Stressors and Coping Mechanisms Predictive of Occupational Injuries and Illnesses?**  
L. Brown-Ellington, Illinois State University, Normal, IL.  

**Objectives:** The goal of this study was to examine whether high levels of workplace psychosocial stressors (wave-1) predicted occupational injury, illness (OII) one year later (wave-2). This study also examined whether wave-1 coping mechanism utilization was associated with the occurrence of OIIA in wave-2, taking into account wave-1 level workplace psychosocial stressors, control variables and wave-1 OIIA.  

**Methods:** There were 2,151 study interviews conducted during wave-1 (2003–2004) in English or Spanish, and 1,418 interviews conducted at wave-2 (2004–2005). Cross-tabulation analyses were used to analyze the incidence rates while logistic regression analyses were used to calculate the associations between generalized workplace harassment (GWH), sexual harassment (SH), job pressure and threat (JPT), coping mechanisms (problem drinking and social support at work and away from work) and OII.

**Results:** Results showed that reporting high levels of GWH (O.R.: 1.04, CI: 0.98–1.04), SH (O.R.: 1.08, CI: 0.99–1.18) and JPT (O.R.: 1.041 CI: 0.97–1.06) at wave-1 were associated with experiencing OII one year later but were not statistically significant. Social support away from work was also associated with reporting an OII one year later while alcohol use was inversely related during the same time period.  

**Conclusions:** Previous studies have shown that GWH and social support at work are associated with an increased risk of experiencing an OIIA during cross sectional analyses which is different from these results. Based on the results of this study, we propose that injured employees may be more likely to perceive hostile work environments during short periods prior to and/or after an OII or the hostile behavior may result from accommodations for one in response to an OII. Further research is needed to understand if reporting high levels of alcohol use causes one to self-select out of the working population.