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October 8, 2015

The Honorable David Michaels
Assistant Secretary
Occupational Safety and Health Administration
OSHA Docket Office
U.S. Department of Labor
Room N-2625
200 Constitution Avenue, NW
Washington, DC 20210

By http://www.regulations.gov

RE: ASSE Comments for OSHA Request for Information on *Chemical Management and Permissible Exposure Limits (PELs)*
[Docket No: OSHA-2012-0023-0001]

Dear Assistant Secretary Michaels:

The American Society of Safety Engineers (ASSE) is pleased for the opportunity to respond to the Occupational Safety and Health Administration's (OSHA) Request for Information (RFI) concerning Chemical Management and Permissible Exposure Limits (PELs). ASSE is the United States' oldest and largest professional safety society, with more than 37,000 members who work diligently to help employers protect the health and safety of workers in every industrial sector, many of which involve the use or management of chemicals that can pose risks to workers if not properly addressed.

There can be no dispute in the fact that the current approach to updating existing PELs and creating new PELs is not working, or in the reality that other methods of chemical hazard recognition and controls are needed to adequately protect workers. To try and find a workable solution, OSHA has posed a variety of questions in the RFI that are designed to obtain information about employer-specific chemical management programs. As an organization representing so many individual professionals with widely varying responsibilities for employers across so many different industries, developing useful comments addressing such specific questions is difficult.

Alternatively, ASSE developed the accompanying white paper, *Options for Improvement of OSHA Permissible Exposure Limits (PELs)*, which we offer for the record of this RFI. The paper explores both the complex background that has brought us to this RFI as well as various approaches for improvement of worker protections. No doubt, the conversation that OSHA has started will continue, and we hope this paper can serve as a resource for our members and others.

We want to be clear, however, that ASSE does use this paper as a platform to advocate a clear preference for control banding as the approach OSHA should undertake to help advance workplace protections from chemical exposures. Control banding has been effective in other countries, and in the pharmaceutical industry in the United States. Control banding is also consistent with utilization of safety and health management programs and a risk-based approach to safety and health management, which our members champion. It is also consistent with standing ASSE policy, which can be found at http://www.asse.org/professionalaffairs/action/control-banding-and-the-future-of-the-hazcom-standard/.

We commend OSHA for embarking on a national dialogue concerning chemical management and worker protection. Thank you for your consideration of ASSE's analysis and position contained in the accompanying white paper.

Sincerely,

Michael Belcher, CSP
President

American Society of Safety Engineers

Options for Improvement of OSHA
Permissible Exposure Limits (PELs)

Adopted October 2015

ABSTRACT: This White Paper explores the establishment of OSHA's PELs, attempts to revise and update its PELs, OSHA's current enforcement regarding industry-based and other recognized occupational exposure levels, and alternate methods of controlling occupational exposures to air contaminants.

Background: OSHA Permissible Exposure Limits (PELs)

Occupational worker exposure to potentially toxic chemicals is a significant risk area for worker health, and imposes costs of some $58 billion per year in the United States.[1] There is general agreement than some 300 of the Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PELs) are grossly outdated and ineffective in protecting workers. This has long been recognized by OSHA itself in its 1989 Permissible Exposure Limits rule, the National Institute for Occupational Safety and Health (NIOSH) in establishing its Recommended Exposure Limits (RELs) for various substances that are more stringent than OSHA requirements over the past 40 years, and even by a 1997 Presidential Commission on Risk Assessment and Risk Management.

[1] Leigh, J.P., *Economic Burden of Occupational Injury and Illness in the United States*, Milbank Quarterly 89 (4), 728-772 (2011).

Moreover, advances in science have created chemicals for which there are no legal limits, and the fast growing nanotechnology sector promises even more challenges in managing occupational health. Some industries have voluntarily adopted "best practices" in chemical management. Others look to practices adopted in other nations, concepts like control banding and the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) program. OSHA attempted a large-scale PELs update more than 25 years ago, only to have it eviscerated by the courts. Since then, efforts to improve enforceable PELs have stagnated, and OSHA has been tempted to use its General Duty Clause to reach beyond its outdated PELs to enforce "recognized" safer limits.

This paper examines the history of PELs development, ensuing litigation, enforcement activities, and proactive strategies for managing chemicals in the workplace. ASSE hopes that this information can be utilized effectively by OSHA in its current "Request for Information" on chemical management and PELs, by Congress in the event that it considers this critical occupational health issue, and by safety and health practitioners tasked with managing these programs on a day-to-day basis.

Statutory Requirements

The introduction to the Occupational Safety and Health Act of 1970 (OSH Act) states that its purpose is "[t]o assure safe and healthful working conditions for working men and women; by authorizing enforcement of the standards developed under the Act. Occupational Safety and Health Act of 1970, § 1 ("OSH Act"), 29 U.S.C. §§651-71.

Section 5(a)(2) of the OSH Act requires employers to comply with "the occupational safety and health standards promulgated under the Act." Section 6 of the OSH Act provides:

> (a) Without regard to chapter 5 of title 5, United States Code, or to the other subsections of this section, the Secretary shall, as soon as practicable during the period beginning with the effective date of this Act and ending two years after such date, by rule promulgate as an occupational safety or health standard any national consensus standard, and any established Federal standard, unless he determines that the promulgation of such a standard would not result in improved safety or health for specifically designated employees. In the event of conflict among any such standards, the Secretary shall promulgate the standard which assures the greatest protection of the safety or health of the affected employees. (emphasis added)

Once two years had passed beyond the effective date of the OSH Act, the Secretary was permitted to promulgate additional safety and health standards. *See* OSH Act, § 6(2)-(4). However, with respect to the promulgation of occupational health standards dealing with toxic materials or harmful physical agents, the Secretary was obliged to "…set the standard which most adequately assures, to the extent feasible, on the basis of the best

available evidence, that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life." *Id.*

Under the OSH Act, the development of occupational health standards must be "based upon research, demonstrations, experiments, and such other information as may be appropriate." Such occupational health standards must "attain the highest degree of health and safety protection for the employee" and must "consider the latest available scientific protection of the employees" and must be "feasible." § 6 (5).

PELs Rulemaking History

In its initial effort to promulgate health standards, OSHA adopted 425 PELs for toxic air contaminants, codified at 29 CFR 1910.1000, Tables Z-1, Z-2 and Z-3. These were based in large part on the recommendations issued by the American Conference of Governmental Industrial Hygienists (ACGIH) and the American National Standards Institute (ANSI).

In some cases, the PELs adopted by OSHA in 1971 were outdated at the time of their promulgation because the recommendations and standards from which they were drawn were based on research conducted in the 1950s and 1960s. In some cases, there remain significant variations in protections between sectors. For example, the currently enforceable crystalline silica PEL for general industry is the equivalent of 100 $\mu g/m^3$, whereas the construction PEL for the same substance is 250 $\mu g/m^3$.

OSHA adopted these "start-up" standards on an expedited basis, without any public hearings or comments. They were based upon "national consensus or "established Federal standard[s]" that improve employee safety and health.[2] Over the years that followed, OSHA successfully adopted several substance-specific standards covering general industry, construction, and maritime sectors, which included both PELs and additional regimens for compliance. These include standards for asbestos, lead, arsenic, cadmium, methylenedianiline (MDA), and benzene.[3]

In response to one of these discrete chemical substance rulemakings, the United States Supreme Court held that, before OSHA promulgates a permanent health standard, OSHA "must make a threshold finding that a significant risk of material health impairment exists

[2] See generally, *American Federation of Labor and Congress of Industrial Organizations v OSHA*, 965 F.2d 962 (11th Cir. 1992) for a more detailed discussion of OSHA's historical adoption of PELs.

[3] OSHA is currently engaged in a substance-specific rulemaking, for respirable crystalline silica, that is at the final rule stage. Due to significant opposition to the proposed rule by industry groups, it is almost certain to result in litigation when finally promulgated. Among the issues raised by opponents is whether the current PEL is sufficiently protective and whether the scientific basis for the rule conforms to the *Benzene* decision criteria for adoption of a new/revised health standard. OSHA also has a substance-specific rulemaking in progress for beryllium, which affects a relatively small number of employers and appears to have support from the regulated community.

at the current levels of exposure to the toxic substance in question." *AFL-CIO v. American Petroleum Institute* ("*Benzene*" case) 448 U.S. 607, 614-15, 642 (1980)(plurality opinion). The high court placed restrictions on OSHA's ability to promulgate health standards, finding that the agency was not entitled to "regulate any risk, only those which present a 'significant' risk of 'material' health impairment." *Id.* at 641-42.

In 1989, OSHA issued a final rule that lowered the existing PELs for 212 toxic air contaminants and established initial PELs for 164 additional toxic substances, primarily chemicals that were not in occupational use (or existence) in 1971 when the original PELs were adopted. *See* 54 FR 2332-2983. The effective date for the new PELs established in that rulemaking was March 1, 1989 with a start-up or effective date for feasible engineering controls set at December 31, 1992. *Id.*

The legal test for OSHA to demonstrate that engineering controls for specific substance rulemakings are feasible is whether "modern technology has at least conceived some industrial strategies or devices which are likely to be capable of meeting the PEL and which the industries are generally capable of adopting." *United Steelworkers v. Marshall*, 647 F.2s 1189 (D.C. Cir. 1980), *cert. denied*, 453 U.S. 913, 1266 (1981).[4]

However, in *American Federation of Labor and Congress of Industrial Organizations v OSHA*, 965 F.2d 962 (11th Cir. 1992)[hereinafter referred to as "PELs Challenge" or "11th Circuit decision"], the revised and new "consolidated PEL" rulemaking was challenged by organized labor, and a multitude of manufacturing and industrial organizations. As the Petitioner, the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) challenged both the procedure used by OSHA to generate the multi-substance standard and OSHA's risk assessment findings on numerous specific substances included in the new standard.

The PELs lawsuit demonstrated that OSHA was able to dissatisfy both employer and employee representatives. The union litigants argued that the selected PELs were, in

[4] The technological feasibility issue has arisen again in the agency's crystalline silica rulemaking, wherein OSHA acknowledges that some industry sectors may have trouble controlling exposures down to the proposed revised PEL of 50 $\mu g/m^3$ and, for some tasks in construction, proposed a table of work practices and PPE that OSHA would apparently accept in lieu of meeting the PEL. However, in other parts of the proposed silica standard, OSHA declares that feasibility is not a concern because it is permitted to adopt a "technology forcing" standard. Ironically, OSHA made the same argument in support of the 1989 consolidated PELs rulemaking, stating in the preamble:

> An OSHA standard may be technology forcing. OSHA may demonstrate feasibility by showing that only a few plants are now in compliance. Moreover, a standard is still feasible even though some respirator use is needed to achieve compliance. . . . [T]he Secretary is not restricted by the status quo. He may set standards which require improvements in existing technologies or the development of new technology....

In support of its legal authority, OSHA cited to a 1975 ruling in *Society of Plastics Industries v. OSHA* (SOCMA), 509 F. 2d 1301, 1309 (2d Cir., 1975).

some cases, insufficiently protective, while the management-side litigants argued that OSHA had not demonstrated that higher limits would not be effective in protecting worker health. Both sides faulted the process, which failed to conduct specific risk assessments for each substance being regulated.

The AFL-CIO and industry Petitioners objected to OSHA's "use of generic findings, the lumping together of so many substances in one rulemaking, and the short time provided for comment by interested parties" which combined "create a record inadequate to support this massive new set of PELs." Id. at 971.

In the PELs Challenge, the 11th Circuit Court of Appeals maintained that Section 6(b) of the OSH Act establishes both procedural and substantive criteria, which the standards must meet, and that are "even more stringent than that in the federal Administrative Procedure Act, 5 U.S.C. § 553. *PELs Challenge* at 969.

The 11th Circuit held that "OSHA's discussions of individual substances generally contains no quantification or explanation of the risk from that individual substance" and "made no attempt to estimate the risk of contracting those health affects." *Id.* at 975. Furthermore, the Court determined that "OSHA made no attempt to show the ability of technology to meet specific exposure standards in specific industries." *AFL-CIO v. OSHA* at 981.

Moreover, the Court held that OSHA inadequately demonstrated that the standards were economically feasible. *Id.* at 982 (citing *United Steelworkers*, 647 F.2d at 1266 ("OSHA must 'provide a reasonable assessment of the likely range of costs of its standard, and the likely effects of those costs on the industry so as to demonstrate a reasonable likelihood that these costs will not threaten the existence or competitive structure of an industry…").

Ultimately, the 11th Circuit decision struck down the revised/new PELs because "the analytical approach used by OSHA" was "so flawed that it cannot stand." *Id.* at 987 ("We hold that OSHA has not sufficiently explained or supported the threshold determinations that exposure to these substances at previous levels posed a significant risk of these material health impairments or that the new standard eliminates or reduces that risk to the extent feasible.").

The consolidated rulemaking approach was abandoned at that point, and has not been attempted in subsequent decades for the majority of the chemicals and air contaminants invoiced. However, in addition to the aforementioned discrete standards on lead, asbestos, etc., in the wake of the 11th Circuit decision, OSHA has succeeded in enacted several expanded health standards, each with its own PEL, including the Ethylene Oxide and Formaldehyde standards. *See* e.g. 29 CFR 1910.1047; 1910.1048.

OSHA RFI Concerning Chemical Management and PELs

Since its attempted 1989 final rule, OSHA has not successfully pursued revising or supplementing the current PELs contained within 29 CFR 1910.1000.[5] However, on October 10, 2014, OSHA published this Request for Information, 79 Fed. Reg. 61384, on *Chemical Management and Permissible Exposure Limits (PELs)*. OSHA stressed that this is RFI is not part of another chemical initiative that OSHA is involved with, pursuant to Executive Order 13650, focusing on chemical facility safety and security. The agency stated that it seeks input concerning more effective and efficient approaches to the current substance-by-substance regulatory approach. The agency is considering updating PELs as well as other strategies that could be implemented to address workplace conditions where workers are exposed to chemicals. It has identified new sources of data and alternative approaches that OSHA could take advantage of, given the legal constraints that have resulted from the aforementioned court rulings.

Among the questions posed by the agency in the RFI are, "What would happen if OSHA…

- Eliminated the Z table entries of most chemicals and moved to control banding?
- Eliminated the Z table entries of most chemicals, and relied on the general duty clause?
- Required employers to consider protecting workers using manufacturer's recommendations?
- Required employers to consider Exposure Scenarios (from REACH)?

It is critical that the safety and health community as well as the employer and labor sectors weigh in on these significant questions, as this is the first regulatory step since 1989 to tackle the complex issue of hundreds, perhaps thousands, of chemicals viewed as lacking sufficiently protective exposure limits or any limits at all. While it is virtually impossible for OSHA to initiate and complete any rulemaking on this issue during the current administration, the responses to the RFI will form the foundation on which subsequent OSHA administrations formulate their regulatory, policy and enforcement positions.

<u>Alternatives to Substance-Specific PEL Rulemakings</u>

Enforcement Under OSHA's General Duty Clause

Section 5(a)(1) of the OSH Act provides:

> Each Employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards

[5] At the time of the OSHA PELs Challenge litigation, the Mine Safety & Health Administration ("MSHA") was concurrently engaged in a consolidated PELs rulemaking to update or create PELs for approximately 420 substances. Following the 11th Circuit decision, MSHA withdrew its rulemaking action and has also refrained from the "group" rulemaking approach to PELs improvement.

> that are causing or are likely to cause death or serious physical harm to his employees.

See 29 U.S.C. § 654(a)(1).

In order to sustain a violation of the General Duty Clause, OSHA must prove the following elements by the preponderance of the evidence[6]:

a. The employer failed to render its workplace free of a hazard;
b. The hazard was recognized by either the cited employer or generally within the employer's industry;
c. The hazard was causing or likely to cause death or serious physical harm; and
d. There was a feasible means by which the employer could have eliminated or materially reduced the hazard.

Although OSHA has primarily enforced the General Duty Clause (GDC) in situations where employees were exposed to workplace safety hazards, it has also enforced the GDC in situations involving health hazards such as occupational exposures to tuberculosis and confined spaces in construction.

In the wake of the 11th Circuit Court decision vacating the 1989 Consolidated PELs, OSHA issued enforcement guidance for situations where "employee exposures exceed the 1989 PELS for the 164 substances that were not previously regulated or for any other unregulated substance."[7] In such cases, violations of the GDC "may be considered." Similarly, in instances where "employee exposures are between the 1989 PELs and the transitional limits (from June 30, the 'Table Z-1 limits') the issuance of Section 5(a)(1) citations may also be considered."

OSHA's enforcement guidance, as well as its Field Operations Manual (which provides instruction to compliance officers on how to issue citations), indicate that it may rely on "industry recognition" of the hazard in order to satisfy the "employer knowledge," as well as being able to rely upon RELs established by NIOSH and Occupational Safety and Health and Threshold Limit Values (TLVs) established by ACGIH.

The "Annotated PELs" Tables

Twenty-five states, Puerto Rico, and the Virgin Islands have OSHA-approved state plans and have adopted some of their own standards and enforcement policies including, in

[6] *See Con Agra, Inc. McMillan Co. Division*, 1983-84 O.S.H. Dec. (CCH) p. 26,420 at 33,523 (1983).
[7] Compliance and Enforcement Activities Affected by the PELs Decision (8/5/93), https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=21220

some cases, more protective PELs. California has been particularly active in this area, and Cal/OSHA established an extensive list of PELs that are enforced in workplaces under its jurisdiction.

Recently, federal OSHA published annotated PELs tables that include the Cal/OSHA limits,[8] and observed that while these are not enforceable in establishments outside of Cal/OSHA's jurisdiction, the Cal/OSHA PELs can provide information on acceptable levels of chemicals in the workplace. In addition to including the Cal/OSHA limits, the annotated tables include comparative references to OSHA PELs, NIOSH RELs, and the ACGIH TLVs. Based on litigation involving ACGIH's TLVs in the past, the OSHA website includes the following disclaimer (in relevant part):

> The Threshold Limit Values (TLVs®) and Biological Exposure Indices (BEIs®) are developed as guidelines to assist in the control of health hazards. These recommendations or guidelines are intended for use in the practice of industrial hygiene, to be interpreted and applied only by a person trained in this discipline. They are not developed for use as legal standards and ACGIH® does not advocate their use as such. However, it is recognized that in certain circumstances individuals or organizations may wish to make use of these recommendations or guidelines as a supplement to their occupational safety and health program.

OSHA's mandatory PELs codified in 1910.100 ("the Z-Tables") remain in effect. OSHA to date has not indicated that the Annotated PELs tables will be used for enforcement purposes, nor have there been any reported instances of this occurring. However, when publishing the PELs tables, OSHA recommended that employers consider using the alternative occupational exposure limits (OELs) because the agency believes that exposures above some of these alternative OELs may be hazardous to workers, even when the exposure levels are in compliance with the relevant PELs. It remains to be seen whether OSHA will issue citations imputing knowledge to employers of more protective PELs, based solely upon information publicly available through the Annotated Tables on the OSHA website.

Control Banding: Solution to Managing Unregulated Chemical Exposures?

Control banding is a complementary approach to protecting worker health by utilizing finite resources to identify and implement exposure controls, and OSHA has posed this as a possible alternative to further specific PELs standard-setting. Given the reality that appropriate OELs cannot be established for every chemical in occupational use, a chemical is assigned to a "band" for control measures, based on its hazard classification

[8] See https://www.osha.gov/dsg/annotated-pels/index.html.

according to international criteria, the amount of chemical in use, and its volatility/ dustiness. The outcome is a recommended control strategy.[9]

A subset of sorts is "health hazard banding," which is based on the premise that one can group chemicals or other agents into categories of similar toxicity or hazard characteristics. The chemicals with similar toxicities are placed in hazard groups, or bands, and this information is used by the safety and health practitioner (along with information on worker exposures to the substance) to develop risk assessments. NIOSH is currently working on guidance for the hazard banding process.

Control banding is a generic technique that determines a control measure (for example dilution ventilation, engineering controls, containment, etc.) based on a range or "band" of hazards (such as skin/eye irritant, very toxic, carcinogenic, etc.) and exposures (small, medium, large exposure). It is an approach that is based on two pillars: the fact that there are a limited number of control approaches, and the fact that many problems have been met and solved before. However, at present, control banding is not intended to be substitute for OELs.[10]

As a risk-based approach, proper use of control banding requires utilization of a safety and health practitioner who can use available information to determine proper banding. This may include use of applicable OELs, if any, even if not promulgated by OSHA or NIOSH, but instead used by a foreign country, the European Union, the International Labour Organization, the ACGIH, a state agency such as Cal/OSHA, or a private sector association/alliance). It will also require understanding of "target exposures" to estimate the level of control necessary for the specific work environment under the conditions present.

OSHA has taken a baby step toward control banding with the 2013 adoption of the Global Harmonization System (GHS) revision to its Hazard Communication Standard, 29 CFR 1910.1200. The rule is currently being phased in, with employee training required as of December 1, 2013, and full implementation by employers in late 2016. The physical and health hazard criteria approach in the GHS system, coupled with the improved information on manufacturer's Safety Data Sheets (SDS), will be of assistance to employers who choose to utilize a control banding approach to workplace safety.

OSHA already uses a similar approach in its construction sector lead standard, which lists required respiratory protection based on airborne lead concentrations, and has proposed a "banded" table for certain construction tasks in its proposed crystalline silica standard.

Control banding is welcomed as a tool, but how it would be received if it were enforceable by OSHA remains to be seen. There are also questions to be considered

[9] *See* AIHA Control Banding Group, https://www.aiha.org/get-involved/VolunteerGroups/Pages/Control-Banding-Working-Group.aspx.
[10] NIOSH – *Control Banding*, http://www.cdc.gov/niosh/topics/ctrlbanding/.

within the safety and health community, including whether certain exposures can be accurately used as surrogates for other exposures to establish appropriate control bands, how to deal with multiple chemical use versus chemical mixtures, and how to make the banding sufficiently task-specific so it will not become generic and ineffective. The hazards may be generic, but the controls should be process-specific.

Control banding is also more suited to a work environment with a staff safety and health professional, or consultant, who can design the system. For smaller employers without appropriate expertise and critical information such as volume, amount of chemical, toxicity, and the properties of the process a chemical is being used with, developing appropriate control banding programs will be challenging without cooperative assistance from OSHA, NIOSH, trade groups and small business organizations.

For OSHA enforcement purposes, control banding's very nature helps to establish the employer's hazard recognition element of the GDC, because knowledge of the pertinent OEL, if any, is needed to determine feasible engineering and administrative controls. As noted previously, worker exposures to unregulated toxic chemicals or nanomaterials that exceed the REL or industry-recognized standard may be cited under the GDC even in the absence of control banding.

REACH

The Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) initiative for chemical management through the chemical's lifecycle is among the PEL-alternative options that OSHA seeks input in this RFI. OSHA is considering a "tiered" approach to exposure-response assessment that would overlap with risk based methodologies used by REACH, as well as by the US Environmental Protection Agency (EPA), NIOSH, and the Agency for Toxic Substances Disease Registry (ATSDR).

REACH applies to both European Union member states and to manufacturers who export products to those countries. In effect since 2007, REACH's registration process has resulted in a growing database of chemical information. If a chemical is determined to be hazardous, the registrant must conduct an exposure assessment, development of exposure scenarios, and exposure estimates, and a risk characterization that includes development of a health effects benchmark. The exposure scenarios must be included in the manufacturer's SDSs to communicate the information downstream to the end users.

OSHA views REACH as having a possible role in technological feasibility determination, because it is creating a data base that OSHA can reference in the future to better understand industries, processes, uses, and products in which chemicals of concern are used. REACH also may provide knowledge about risk management measures and controls currently in place, and develop scenarios where exposure may be greatest, according to OSHA's RFI notice.

GDC Enforcement of More Protective OELs

The General Dynamics Case

In the 1980s, OSHA cited General Dynamics Land Systems Division ("General Dynamics") for alleged employee overexposures to Freon, which was used to clean up hydraulic oil that leaked during the installation of internal hydraulic systems involving the M-1 Abrams tank manufacturing process. *Brock v. General Dynamics Land Systems Division*, et. al.,815 F.2d 1570 (D.C. Cir. 1987). At times, "employees would use [gallon-sized] buckets or 2 ½ gallon spray containers to apply solvent (i.e. Freon) to the affected area" which resulted in the "dumping [of] gallons of the solvent into the hull where it would evaporate or exit through a drain in the floor." This process caused employees to become overcome by Freon vapors, and death occurred in several cases.

The subject substance, Freon (tricholor trifluoroethane), is regulated under the original 1971 PELs, 29 CFR 1910.1000(a)-(d), with a PEL set at 1,000 parts per million (ppm). Here, OSHA determined that employees engaged in the aforementioned application of Freon were overexposed above the PEL based on the fact that numerous employees were overcome by Freon vapors and cited General Dynamics for a violation of 29 CFR 1910.1000.

However, OSHA also cited General Dynamics for a violation of the GDC for exposing its employees to confined space-related hazards involving the same Freon associated exposures.

General Dynamics contested the GDC violation on the basis that the overexposures to Freon, if any, were governed by 29 CFR 1910.1000 and therefore, the particular OSHA standard should apply.

The Occupational Safety and Health Review Commission (OSHRC) agreed with General Dynamics and concluded that not only had OSHA failed to prove that the PEL for Freon had been violated, but that 29 CFR 1910.1000 preempted enforcement via the GDC, based upon the legal principle that a specific regulation or rules prevails over a general one. *See* 29 CFR 1910.5 ("an employer who is in compliance with any standard in this part shall be deemed to be in compliance with the requirement of section 5(a)(1) of the Act, but only to the extent of the condition, practice, means, methods, operation, or process covered by the standard.").

However, the United States Court of Appeals for the District of Columbia Circuit determined that the charging language and hazard described by the citation alleging a violation of 29 CFR 1910.1000, was "distinct" from the hazard identified in the GDC violation. With respect to the violation of 29 CFR 1910.1000, OSHA alleged overexposures to Freon, whereas the GDC's charging language alleged that the interior of the M-1 Abrams tank was a confined space and that proper confined space procedures were not followed.

As such, the Court overturned the OSHRC decision and held that the GDC citation was proper. More significantly, the Court declared that 'when an employer is aware of a hazard that is not in fact addressed by a specific hazard, then of necessity that standard cannot be deemed to have preempted his obligation under the general duty clause." (emphasis added)

Thus, the GDC imposed an obligation "to take whatever measures may be required by the Act, over and above those mandated by the safety standard, to safeguard his workers."

The 2013 Fiberdome Case

In September 2013, OSHA cited an employer, Fiberdome, for seven "Serious" citations involving alleged overexposures to Styrene, a chemical used extensively in the manufacture of plastics, rubber and resins. The citations included a violation of the GDC based upon the fact that workers were exposed to Styrene at levels above the *industry* agreed-upon level of 50 parts per million (ppm), even though the employer had not exceeded the codified OSHA PEL of 100 ppm. The industry agreed-upon level of 50 ppm for styrene was the same as NIOSH's REL of 50 ppm, and was also the transitional limit established under the 1989 PEL final rule that was later vacated.

While OSHA's Assistant Secretary, David Michaels, told the Wall Street Journal[11] at the time the citation was issued that "the Fiberdome case isn't indicative of any pattern," the agency's press release stated, "Companies must be aware of the hazards that exist in their facilities and take all possible precautions to minimize the risk of illness."[12]

Fiberdome subsequently accepted the GDC citation in settlement and withdrew its contest; therefore, the appropriateness of using an industry-adopted "best practice" as the basis for GDC enforcement of more protective PELs will not be litigated at this time, but should be considered a potential weapon in OSHA's enforcement arsenal. This is especially true where an employer agrees to maintain a lower OEL for a chemical substances as part of a corporate wide settlement, or its industry trade group makes an agreement with OSHA through an alliance or has published "best practices" that include maintaining OELs at a level lower than what OSHA formalized in its codified PELs.

The Diacetyl Case Study: No Formal OEL

Diacetyl is a natural byproduct of fermentation and is also synthesized by chemical manufacturers. Diacetyl gives butter and certain food flavorings a distinctive buttery flavor and aroma. Food flavorings containing diacetyl are used in microwave popcorn and other snack foods, pet foods, candies, baked goods, and other food products.

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[11] *OSHA Uses New Way to Enforce Out-of-Date Rules for a Risky Chemical*, Wall Street Journal (11/21/2013), http://online.wsj.com/news/articles/SB10001424052702304243904579200580716344354.
[12] *See Fiberdome Settlement Affirms General Duty Citation for Exposures Below OSHA PEL*, ASSE Government Affairs Update ((9/7/14), http://www.asse.org/en/index.php/govt_affairs/fiberdome-settlement-affirms-landmark-general-duty-citation-for-exposures-below-osha-pel/.

Exposure to diacetyl was linked in NIOSH studies to respiratory illness, including the so-called "popcorn workers' lung" (*bronchiolitis obliterans*).

There is no established OSHA PEL, NIOSH REL or other OEL for diacetyl. OSHA had initiated a rulemaking, following the NIOSH reports of illnesses, but that item was removed from the agency regulatory agenda as of 2014.

According to OSHA guidance[13]:

> determining appropriate respiratory protection will depend on the specific conditions under which these chemicals are used. Employers must consider the operations, environmental conditions, and other factors when selecting appropriate respirators (29 CFR 1910.134(d)). When an employer has completed a hazard evaluation and has determined that respiratory protection is required, a suitable respirator must be selected. Based on the NIOSH investigations of microwave popcorn plants, a NIOSH-certified air-purifying respirator equipped with organic vapor cartridges in combination with particulate filters would provide the minimum level of protection. Supplied air respirators can also be used in these facilities. Powered air-purifying respirators (PAPRs) (with organic vapor cartridges and particulate filters) are acceptable alternatives and may be easier for employees to wear in hot mixing rooms.

In the absence of an industry recognized OEL, any TLV or NIOSH REL, OSHA would be hard-pressed to issue a GDC for worker exposures to diacetyl. Instead, OSHA has issued general guidance to employers including recommending that "flavoring and food manufacturers review and consider implementing applicable recommendations including engineering and work practice control measures, medical surveillance, workplace monitoring, and use of appropriate PPE to minimize each worker's exposure to flavoring substances."[14]

Agency guidance, because it does not go through the "notice-and-comment" rulemaking requirements pursuant to the Administrative Procedure Act and the OSH Act for formal rules, is considered non-binding on both the agency and the regulated community. It can be revised or withdraw by the agency without notice. OSHA historically has refrained from issuing GDC citations to employers where the primary basis for imputing knowledge is through OSHA-issued non-binding policy or guidance documents.

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[13] *See* "Hazard Communication Guidance For Diacetyl And Food Flavorings Containing Diacetyl" at https://www.osha.gov/dsg/guidance/diacetyl-guidance.html.

[14] OSHA Safety and Health Bulletin, "Occupational Exposure to Flavoring Substances: Health Effects and Hazard Control," https://www.osha.gov/dts/shib/shib10142010.html.

The Challenge of Nanomaterials' OELs

Nanotechnology involves the understanding, manipulation, and control of matter at dimensions of roughly 1 to 100 nanometers, and includes:

- Carbon buckyballs or fullerenes;
- Carbon nanotubes;
- Metal oxide nanoparticles (e.g., titanium dioxide); and
- Quantum dots, which are nanoscale semiconductor materials (e.g., cadmium selenide).

As in the case of diacetyl, there is no codified OSHA PEL for nanomaterials (or nano-particles). However, NIOSH has proposed a REL of 1 $\mu g/m^3$ for elemental carbon for as a respirable mass 8-hour time-weighted average (TWA) concentration (applicable to carbon nanotubes and carbon nanofibers).[15] NIOSH has also proposed a REL of 0.3 mg/m3 for ultrafine titanium dioxide. *Id.*

At this point, OSHA has determined that the GDC and its personal protective equipment standards, including 29 CFR 1910.132-138, are applicable to situations where workers are exposed to nanoparticles. Therefore, it is possible that OSHA will invoke the aforementioned RELs under a GDC violation, particularly where worker protections such as respiratory protection are not being utilized and adverse health effects are reported in the subject population. This is only a starting point, however, because new nanomaterials are being invented each year, with health and environmental effects yet to be determined. This remains one of the more challenging issues for OSHA to address both through rulemaking and through GDC enforcement.

Employer "Knowledge" of Health Hazards

As discussed above, in order to establish a violation of OSHA's GDC, OSHA must prove among other elements, "employer knowledge;" also referred to as "hazard recognition." The establishment of imputed "employer knowledge" of the alleged health hazards in both the *General Dynamics* and *Fiberdome* cases played a critical role in OSHA's ability to sustain its GDC citations. While its own guidance is non-binding, OSHA views NIOSH criteria documents, EPA publications, manufacturer safety data sheets, and technical manuals as authoritative sources, which if employer awareness can be demonstrated, can establish the "employer knowledge" element necessary to sustain a GDC violation.

As discussed *supra*, OSHA has published the Annotated PELs tables to include the applicable RELs, TLVs and transitional PELs that were struck down in *AFL-CIO v. OSHA*. Thus, it appears that an employer's actual knowledge of OSHA's annotated PELs for a particular agent may satisfy the "employer knowledge" element for GDC citation purposes. OSHA has also published a "Transitioning to Safer Chemicals" toolkit, which

[15] *NIOSH Current Intelligence Bulletin 65: Occupational Exposure to Carbon Nanotubes and Nanofibers*, http://www.cdc.gov/niosh/docs/2013-145/.

could be used to in GDC cases to demonstrate feasibility of abatement by substituting a safer chemical for the one cited by OSHA.[16]

"Voluntariness" of Industry Guidelines

OSHRC has determined that the "hazard recognition" or "employer knowledge" element necessary to sustain a violation of the GDC "may be shown by proof that 'a hazard . . . is recognized as such by the employer' or by 'general understanding in the [employer's] industry.'"[17]

In the case of *Fiberdome*, the employer relied upon an industry agreed-upon OEL of 50 ppm for styrene (also OSHA's 1989 transitional exposure limit) that it exceeded by 1.3 times. However, the personal exposure was less than OSHA's PEL of 100 ppm, and this level was not exceeded placing the employer in technical compliance with the codified standard. Nevertheless, OSHA sustained its GDC citation because Fiberdome acknowledged through settlement that it had industry-based knowledge that OSHA's PEL was inadequate to protect workers from styrene vapors. Furthermore, the overexposed worker manifested signs and symptoms of styrene exposure that required medical treatment, another factor considered by OSHA in GDC enforcement. However, OSHA would have had significant difficulty in legally sustaining the GDC citation in the absence of an industry agreed upon OEL of 50 ppm.

This raises a number of considerations for further discussion:

- Will industry associations and safety organizations become reluctant to enter into alliances with OSHA, or to voluntarily promulgate "industry best practices" that involve setting more stringent chemical OELs if they know that their members can be prosecuted as a result of failing to conform to such industry standards (even while being in technical compliance with OSHA's outdated codified PELs).
- Will employer-side groups be willing to establish OELs for currently OSHA-unregulated air contaminants and chemicals if prosecutions will result?
- How will enforcement of OELs be managed when it involves multi-national corporations that adhere to more protective OELs in other nations?
- Can OSHA cite multistate employers at federal OSHA state worksites for failing to follow the more stringent standards they follow in California or other states?

These are policy issues that OSHA should consider and address, one way or the other, so that employers and the safety and health professionals who work for them understand what is and is not expected of them in terms of compliance.

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[16] *See* https://www.osha.gov/dsg/safer_chemicals/index.html.

[17] *Sec. of Labor v. Otis Elevator Co*., OSHRC Docket No. 03-1344 (Feb. 3. 2005)(citing *Kokosing Constr. Co.*, 17 BNA OSHC at 1873, 1995-97 CCH OSHD at p. 43,724; see also *Wiley Organics, Inc.*, 17 BNA OSHC at 1591, 1995-97 CCH OSHD at p.43,275 ("A hazard may be recognized by either the individual employer itself or its industry.").

OEL Issues for the Safety and Health Practitioner

Safety and health practitioners, particularly those who are certified by either the Board of Certified Safety Professionals[18] or American Board of Industrial Hygienists,[19] are bound to provide competent professional services. Chief among responsibilities and duties of the safety and health professional are identification and risk assessment of occupational safety and health hazards, and effectively communication of the risks and appropriate control methodologies to employers, employees, unions, governmental agencies, and clients, depending upon the professional's role.

An important part of risk characterization is determining whether the condition(s) of concern can adversely affect the safety and health of workers, as well as whether the condition violates an applicable safety and health standard set by a rulemaking authority such as federal OSHA or a state plan OSHA agency.

In the case of occupational chemical or air contaminant exposures to substances not currently regulated by OSHA, it requires research on relevant NIOSH RELs, ACGIH TLVs, state OSHA requirements, information from SDSs, and even review of foreign requirements. The task often requires a case-by-case analysis depending on the circumstances present, although overarching "best practices" can certainly be utilized and then tailored to the specific situation where more stringent controls are deemed necessary.

Depending upon the subject matter, the applicability and recommendations of voluntary consensus standards must also be considered, at least for information on best practices on engineering, work practice and protective equipment controls since consensus occupational exposure guidelines (OEGs) are not generally available.[20] Where a PEL is applicable to an air contaminant, the answer is clear: the PEL must not be exceeded to the extent all feasible engineering controls have been employed.

However, where a PEL does not exist but an industry-recognized level of protection has been established, the question as to whether the industry recognized standard must be complied with is less clear, especially in light of *Fiberdome*. Taken a step further, using the *Fiberdome* example, would a safety and health professional's awareness of the 1989 OSHA transitional limit for styrene (50% of the current PEL) impose an obligation upon

[18] BCSP Code of Ethics, 1, "Hold paramount the safety and health of people, the protection of the environment and protection of property in the performance of professional duties and exercise their obligation to advise employers, clients, employees, the public, and appropriate authorities of danger and unacceptable risks to people, the environment, or property."

[19] ABIH Code of Ethics, Sec. II.A.1., "Deliver competent services with objective and independent professional judgment in decision-making."

[20] Currently, none of the national voluntary consensus organizations that deal with occupational safety and health have elected to set occupational exposure guidelines (OEGs), although ASTM International did contain certain OEGs in non-mandatory appendices to its consensus standards on Crystalline Silica (ASTM E1132 and E2625). ACGIH does not meet the definition of a "consensus" organization in OMB Circular A-119 (concerning use of consensus standards in federal agency rulemaking activities) because its membership is limited to governmental employees and it does not have the same transparency in its standards development as do organizations like ANSI, ASTM International, NFPA etc.

herself to ensure that this OEL was complied with, even in the absence of industry-adopted "best practices"? If an in-house safety and health professional fails to make the appropriate recommendation in light of the totality of available information about chemical hazards, and a fatality occurs in conjunction with a willful GDC citation, criminal prosecution could result. The professional would be the one most likely to have recognition of the hazards and therefore could be targeted.

Based on OSHA's 1993 Enforcement Guidance, and its recent website adaptation to include an annotated list of PELs and corresponding OELs, and chemical substitution guidance, today's safety and health practitioner must concern himself with all potentially applicable OEL information in order to protect worker safety and health, and serve an employer or client's best interest as well as ensuring that all workers are properly protected with regard to on-the-job chemical hazards.

Need for Agency Guidance

Rather than bury its 1993 Enforcement Policy Statement within its website, OSHA should clearly articulate within its Field Operations Manual and other authoritative agency documents its enforcement philosophy governing the issuance of GDC citations in instances where an applicable OEL is exceeded (e.g. industry standard, REL, TLV, state or foreign governmental standard), but the exposure level is below the PEL or where OSHA has yet to adopt any PEL.

Thus far, OSHA has been careful not to advance an enforcement policy based on its adoption of the annotated PELs and chemical substitution toolkit. OSHA created this web resource to "enable employers to voluntarily adopt newer, more protective exposure limits."[21] OSHA further "advise[s] employers, who want to ensure that their workplaces are safe, to utilize the OELs on these annotated tables, since complying with OSHA's antiquated PELs will not guarantee that workers will be safe."

However, failure to announce its GDC "Bright Line" may serve as a disincentive to employers to adopt OELs that are below the PEL for fear that that they may be cited despite their best efforts. Furthermore, citing employers for attempting to comply with an industry or consensus standard that is more protective of workers than an applicable mandatory standard also raises issues of fundamental fairness and equal protection.[22]

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[21] See http://www.asse.org/en/index.php/govt_affairs/osha-resources-to-encourage-safer-chemicals-and-better-pels/.

[22] The Equal Protection clause contained within the Fourteen Amendment (and applicable to the federal government under the Fifth Amendment) provides in pertinent part: "nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws." In essence, those employers who employ safety and health professionals, or who engage in development of consensus standards by serving on an ANSI or ASTM committee, or who belong to more proactive trade associations could be held liable for failing to provide more stringent protections (under the GDC for hazards not regulated by OSHA) than employers who are not diligent about keeping up with best practices. In essence, this rewards an employer for "playing ostrich" and fails to provide equal protection for the proactive employers under the law.

OSHA should also clarify its position concerning safety and health audits, as well as control banding, as there is no current requirement to conduct these processes but the results of the risk analyses and workplace inspections create the potential for further enforcement under the GDC – particularly where they reveal information indicating that enforceable OSHA standards are not sufficiently protective of workers. In the past, OSHA adhered to a sort of "safe harbor" for self-audits, wherein as long as violative conditions were corrected prior to an inspection, citations generally would not be issued.[23]

However, in recent years, OSHA has made greater use of its subpoena power to obtain results of audits (both internal and those conducted by insurance companies) and use them to sustain "willful" violations. The erosion of this audit protection may have a chilling effect on both audits and control banding. These are effective, proactive actions, but employers may be reluctant to utilize these tools if documentation can be used against them legally to show a "pattern" of violation or to impute knowledge.

ASSE's Legislative Proposal

ASSE has urged Congress to "build on bipartisan agreement that OSHA's Permissible Exposure Limits (PELs) need to be updated." This information was also shared with OSHA. See ASSE Letter to Subcommittee on Workforce Protection (February 4, 2014). To that end, ASSE has submitted its OSH Reform Bill, which contains provisions addressing the update of OSHA's PELs. Specifically, Section 102 of the draft OSHA Reform Bill – 2014 provides:

> Not later than 30 days following the enactment of this Act, the National Institute for Occupational Safety and Health (NIOSH) shall forward to the Secretary of Labor its Recommended Exposure Limits (RELs) for chemical and other hazards to workers, along with the research data and other necessary information. Within 30 days of receipt of this information, the Secretary of Labor shall require the Occupational Safety and Health Administration (OSHA) to adopt such recommended exposure limits as the Permissible Exposure Limits (PELs) for application in all OSHA-regulated workplaces. The Secretary of Labor shall be obligated to adopt such exposure limits as PELs for application within 180 days of receipt of such information. Nothing in this subsection shall limit OSHA from establishing requirements for other chemicals and substances than those established pursuant to this subsection and in accordance with the other requirements of this section.

Thus, ASSE has urged OSHA to adopt up-to-date RELs rather than apply them *ad hoc* under its GDC scheme, depending upon which employer "has knowledge"

[23] *Final Policy Concerning the Occcupational Safety and Health Administration's Treatment of Voluntary Employer Safety and Health Self-Audits*, 65 Fed. Reg. 46498 (July 28, 2000).

through industry groups, insurance company recommendations, or based on having a safety/health professional on staff or as a consultant.

Conclusion: Control Banding Is the Preferred Approach to Chemical Hazard Management

As with most complex issues, there is no simple solution, certainly none with overwhelming consensus. Given the legal framework within which OSHA PELs must be developed, absent Congressional intervention to permit either a wholesale adoption of NIOSH RELs, as advanced in ASSE's draft legislation, or adoption of PELs in some sort of streamlined group PEL update that lessens the *Benzene* and *PELs Challenge* decisions' burden of risk assessment, substance-by-substance, alternative approaches will be required.

OSHA simply cannot modify existing PELs or create new PELs to respond to emergent chemical hazards in a timely manner using historical rulemaking. ASSE has actively participated in tripartite meetings with labor, management and safety/health representatives over the past decades, to determine if consensus could be reached on a limited number of PELs that could be modified through a form of negotiated rulemaking process. While, in theory, there was recognition by all involved that the focus should be on substances where most stakeholders agree that the current PEL is insufficiently protective and most also agree there is a specific "right level" that should be used instead, the so-called "pilot PELs project" collapsed because stakeholder consensus could not be reached on which substances met those criteria.

In the past, there was some Congressional interest in legislation that would have formally authorized the PELs project, which was intended to negate the 11th Circuit Decision, in part, and it is possible that this concept could be resurrected in the future. If this approach were to prove feasible and gain support from stakeholders, the emphasis in such a "group PEL" project should be on maximizing exposure by selecting chemicals that are in widespread use either in multiple industry sectors, or in a specific sector (e.g., construction).

However, given the likelihood of further delay in updating enforceable PELs in any meaningful way via individualized rulemaking and the lack of impetus for legislative fixes, ASSE advocates that the safety and health community adhere to the most current, effective "best practices" applicable to their particular circumstances. It is imperative to remain knowledgeable about updates in RELs, TLVs, state PELs and any OELs adopted by the foreign countries in which an employer operates. Staying abreast of current consensus standards can also improve safety and health performance, including protecting workers against chemical hazards.

Risk assessment and hazard recognition are key facets of any robust safety and health management program, such as those created using the structure of the

ANSI Z10 national consensus standard, or under mandates for Injury and Illness Prevention Programs (I2P2) such as those required by Cal-OSHA and several other state-plan state OSHA programs. Risk assessment requires multiple analytical steps: hazard identification, dose-response assessment, exposure assessment, and risk characterization.

The goal of control banding is to determine how to safely handle chemical compounds that have minimal, or missing, data. This occurs as part of a robust chemical handling program that links the bands to controls selected using a risk assessment by a qualified safety and health professional. Once an employer has done an appropriate chemical hazard risk assessment, it will have the information needed to implement control banding for the chemical exposures in that workplace.

It is logical to implement control banding for control of hazardous air contaminants in the workplace, and ASSE endorses this approach above others referenced in OSHA's RFI.

In 2012, OSHA updated its Hazard Communication Standard, 29 CFR 1910.1200, to incorporate the building blocks of the Global Harmonization Standard (GHS) with respect to physical and health hazard classification, improved warning labels, utilization of pictograms to communicate types of hazards associated with chemical products, and improved and consistent formats for Safety Data Sheets (SDSs).

In order to comply with this new standard, by June 1, 2015, all chemical manufacturers had to review the occupational health and safety information for the chemical components in their products, and update the warning labels and SDSs. This requires communication to downstream employers of the most current and accurate information on SDSs concerning PELs, RELs, ACGIH TLVs, as well as recommended personal protective equipment (e.g., types of respiratory protection).

Therefore, the revised SDSs will contain the latest toxicological information that can be referenced by employers and their workers. Many revised SDSs also contain key information on engineering controls. The information required by "HazCom 2012" – used in conjunction with an appropriate chemical hazard management plan specific to the individual workplace -- will facilitate use of control banding by employers, both large and small. However, employers must be cautious when considering data on "similar" chemicals in developing control bands, as extrapolation may not always be sound, and data must be validated.

The smallest employers will likely lack the in-house technical expertise to implement a complex control banding system, and it will be imperative for OSHA and the safety and health community to provide compliance assistance resources and training for such employers. A good model is the United Kingdom's Control

of Substances Hazardous to Health (COSHH) program, which uses control banding concepts to help small employers identify appropriate chemical hazard controls for the workplace. Alternately, OSHA can expand its "annotated PELs" table on the agency website, to include chemicals that currently lack any OSHA PEL but for which other agencies, countries or groups (e.g., ACGIH) do.

Control banding is already widespread in European nations, and has proven to be efficacious. In addition, as of 2015, nations within the European Union also must operate under the GHS system. It is logical that the United States should follow suit, and this will also simplify and improve worker protection for companies that operate in multi-national markets by bringing consistency to the chemical management process and policies.

Control banding, consistent with a risk-based approach to safety and health management, would require employers to assess the chemicals used in their workplaces and place them into appropriate bands according to their known hazards and controls, aided by the information provided on the chemicals' SDSs and in OSHA's annotated PELs tables, and supplemented by the employer's exposure monitoring to determine which job classifications involve exposures to specific chemicals.

While employers cannot be expected to develop individualized OELs themselves for each chemical product used in the workplace, for which there is no existing OSHA PEL, in evaluating chemicals for control banding the employers can utilize other recognized sources of information including NIOSH RELs, ACGIH TLVs, and Cal-OSHA exposure limits. Chemical OELs adopted by other nations may also have utility in developing appropriate control bands, especially those countries using REACH, which has resulted in development of additional information on chemicals that OSHA could access and utilize for both enforcement and compliance assistance efforts.

In addition, since 1986, OSHA has had a Memorandum of Understanding with the EPA relating to chemicals regulated under the Toxic Substances and Control Act (TSCA), and this provides for sharing of toxicological and risk data for TSCA-covered chemicals. However, use of TSCA data would require adjustment for occupational exposure because EPA standards address public health exposure limits that focus on 24/7 protection of the most sensitive populations rather than appropriate limits for occupational exposures that typically do not exceed 40 hours per week).

While infeasible for small employers, larger chemical companies may be able to utilize Quantitative Structural-Activity Relationship (QSAR) to group chemicals and compounds into appropriate bands based on their common attributes, reactions, and qualities. A validated QSAR will help employers determine how chemicals will act in an occupational setting but it will not, standing alone, be sufficient to establish an occupational exposure band. It is but one tool in the

safety and health professional's toolbox when it comes to chemical risk assessment and management.

OSHA should continue, and expand, its safe harbor policy, to refrain from using audits and control banding findings for purposes of General Duty Clause enforcement. Auditing and control banding are both safety and health tools that should be encouraged, especially in the absence of appropriately protective OSHA PELs.

OSHA should also reject the approach of using the General Duty Clause to enforce more stringent limits in a selective manner, targeting employers whose industry has adopted "best practices" concerning certain chemical OELs that are more protective than OSHA's codified PELs, because that will have a counter-productive effect of encouraging employers to play ostrich about such hazards to avoid legal exposure arising from "recognition" of the hazards or discouraging employers from hiring safety and health professionals whose knowledge might be imputed to the company.

Finally, if control banding is adopted – either through rulemaking or on a voluntary, proactive, basis as part of a comprehensive risk management program – it will be critical that employers fully "buy-in" to this approach, as once there is recognition of chemical hazards and appropriate controls, the companies will be obligated to fund and authorize necessary improvements dictated by the findings of control banding risk assessment and/or safety and health audits.