

INTRODUCTION

Dr. Andrew Maier of Integral Consulting Inc. served as the guest for a virtual table talk session hosted by the Society for Chemical Hazard Communication on Wednesday April 15, 2026. The session addressed a variety of specific topics and questions related to the current landscape of occupational exposure limits (OELs). The hosts, on behalf of attendees, requested a concise summary of some of the resources and concepts discussed during the session. Emphasis was given for open domain and freely available resources. The resources noted in this summary are intended as a starting point for the hazard communication specialist and are not intended as an exhaustive list. No specific resource is being endorsed by inclusion, and the content is not intended as regulatory or legal advice. This summary was developed on April 27, 2026.

OELS — MORE THAN A NUMBER

OELs are a critical component of an overall management system for safe chemical handling and occupational health programs. OELs are generally presented as air concentrations below which it is expected that workers will have minimal risk of adverse health effects from exposures in the occupational environment. Note that the actual risk as exposure reaches or exceeds the OEL depends on the underlying science and policy basis for the OEL and the scenario to which it is applied (i.e., the job duties or task). Nevertheless, OELs are important tools for occupational risk assessment and management.

The OEL value itself is often used as part of the risk characterization process and guides the identification and prioritization of risk management measure implementation. Specifically, as potential exposures reach and exceed the OEL, risk managers assess the need to implement exposure controls following the hierarchy of controls concept.

However, for hazard communication specialists, the OEL and its underlying documentation are also an important resource for hazard assessment and communication – i.e. the OEL is more than a number. This reflects that OELs have a document or dossier that provides the toxicological basis for the OEL value. These documents can serve as an important resource to contextualize the OEL value, serve as a cross check to safety data sheet (SDS) hazard classifications and summary information, provide content for hazard communication training, and guide medical surveillance program design.

CONFUSING LANDSCAPE OF OELS

OELs are important tools for risk assessment, but the identification and application of these values is complex. For U.S. centric SDS generation the requirements for OEL identification and listing are described in the Hazard Communication Standard (HCS) promulgated by the U.S. Occupational Safety and Health Administration (OSHA). With regard to OELs, Mandatory Appendix D of the HCS (29 CFR 1010.1200) describes required content in Section 8 of the SDS as the “OSHA Permissible Exposure Limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH®) Threshold Limit Value (TLV®), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the SDS, where available.” In addition, OSHA has published commentaries and guidance regarding the potential limitations of its OSHA PELs, and the role other OELs can play in compliance with an employer’s *General Duty* to provide a workplace free of recognized hazards (for example see a letter of interpretation from OSHA on this topic: <https://www.osha.gov/laws-regs/standardinterpretations/2018-11-02>). Thus, in most cases, SDS authoring or review will require some research on OELs beyond the PEL and TLV®.

This research reflects that there are many different organizations that derive and publish OELs. The underlying risk policy and intended use of the values can vary so each OEL needs close examination before it is applied in a risk assessment context. A further complexity is that there is no single open domain resource (to the author’s knowledge) that lists all OELs. Moreover, the landscape can be confusing because the availability of OELs continues to shift. Organizations that derive OELs revise existing values and derive new ones with an inconsistent cadence. New sources of OELs also emerge. Two important examples include the recent activity of the U.S. Environmental Protection Agency (EPA) under regulations responsive to the Toxic Substances Control Act (TSCA) that are requiring new risk management rules for existing substances in commerce for which occupational exposure may present an unreasonable risk as determined by EPA. These EPA rules often include an OEL, termed the existing chemical exposure limit (ECEL). In addition, at least three U.S.-based non-profit organizations derive health-based OELs for diverse chemicals of industrial interest and provide access to technical documentation describing the basis for the OEL value. A recent expansion in this area is the organization of an OEL Committee within the American Industrial Hygiene Association (AIHA) Guideline Foundation. The AIHA had traditionally been a source of the Workplace Environmental Exposure Levels (WEELs™); However, the WEELs are now managed through another non-profit organization.

OPEN-SOURCE COLLATIONS OF OELS

Effective hazard communication efforts, and SDS requirements, require identifying and listing the relevant source OELs. Further, SDSs for international jurisdictions will have their own requirements. Thus, it is helpful to ensure a systematic approach to identify OELs, or if

using an external service, to develop quality assurance auditing processes. A first step in this systematic approach is to collate OEL databases and resources. This section is not intended as a comprehensive list of resources. However, for SDS and hazard communication some relevant resources mentioned in the SCHC Table Talk included the following with a few key points regarding the content of each.

- **OSHA Occupational Chemical Database:** <https://www.osha.gov/chemicaldata>. Provides access to PELs as well as the TLVs®, values from the National Institute for Occupational Safety and Health (NIOSH), and California OSHA. Includes ready links to the sampling methods and other chemical specific information.
- **GESTIS Substance Database:** <https://limitvalue.ifa.dguv.de/substances>. An information system on hazardous substances of the German Social Accident Insurance that provides a database of international limit values. Note these are largely government values, and does not include all non-governmental values. Background information can be found here: <https://gestis-database.dguv.de/>.
- **EPA ECEL:** <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/existing-chemical-exposure-limits-under-tsca>. Note that this is the program page that provides background and initial links – including to the ECEL values table. Also note this page does not provide other EPA program specific OELs – such as from the Office of Pesticide Programs.
- **AIHA Guideline Foundation OEL:** <https://www.aiha.org/get-involved/aiha-guideline-foundation/oel>. Provides a comprehensive list of OELs and key notations (i.e., for skin and dermal absorption). The table can be accessed directly at the following link: <https://www.aiha.org/get-involved/aiha-guideline-foundation/oel/oel-table>.
- **Occupational Alliance for Risk Science:** <https://tera.org/oars-weel/>. This webpage provides the WEEL™ values and contact information relevant to these values.

This list above is not exhaustive and does not include the many additional available resources with duplicate content. For example, the on-line NIOSH pocket guide lists OSHA PELs and CA OSHA values. The ACGIH publishes a compilation that includes TLVs®, PELs, NIOSH Recommended Exposure Limits (RELs), German values, and WEELs™. The GESTIS database includes EU OELs and a separate database for derived no effect levels (DNELs).

For European compliant SDSs, DNELs, EU-wide, and country-specific limits will be provided. As noted earlier in this summary, the intended use and interpretation of different limit values is important. The distinction between DNELs and OELs is a good example. DNELs support chemical registration decisions related to chemical safety assessment but are not intended to be used for same function as health-based OELs. For example, specific workplace monitoring and facility risk assessments are compared to the OEL, not the DNEL. For a bit

more on this issue from the European Chemicals Agency (ECHA) and the EU Chemical Agents Directive (CAD) see the following:

- ECHA Guidance on information requirements and chemical safety assessment. Appendix to Chapter R.8: Guidance for preparing a scientific report for health-based exposure limits at the workplace;
- ECHA Guidance on the compilation of safety data sheets;
- COUNCIL DIRECTIVE 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work.

There is often a benefit to assessing each resource independently to identify all the content available for a chemical of interest. In addition, in some cases checking each source at the host organization's webpage would ensure that the latest developments are captured.

OCCUPATIONAL EXPOSURE BANDING

Although numerous OELs may be available for a substance under review, in fact, most chemicals in commerce have no published OEL. In some cases, the chemical manufacturer or chemistry innovator may provide an OEL on product information, including the SDS they author. However, addressing chemicals with no OEL is a common challenge. There are several risk assessment and management techniques to address such scenarios. One common approach is to rely upon a hazard and control band. The technique is common as an internal risk management control to link selection of risk management measures to chemical hazard profiles. Some companies may provide an exposure or hazard band on their SDS. This approach is commonly applied in the pharmaceutical sector. However, OEL ranges associated with varying hazard characteristics can also be derived using open-source tools. One example is the NIOSH Occupational Exposure Banding (OEB) procedure. See related technical document at the topic page from NIOSH: https://www.cdc.gov/niosh/exposure-banding/about/?CDC_AAref_Val=https://www.cdc.gov/niosh/topics/oeb/default.html).

Training Resources

Our one-hour session was very enjoyable. However, it was not enough time for a deep review of any of these topics. SCHC has offered OEL content courses for those who would benefit from additional information. The AIHA has several mechanisms for virtual and in-person courses on OELs. The AIHA OEL Committee page provides course contact information.

Closing

I hope you find this concise resource summary useful. Should you have any questions or comments, please feel free to contact me at 513-520-2943 or amaier@integral-corp.com.