



U. S. Chemical Safety and Hazard Investigation Board RECOMMENDATIONS STATUS CHANGE SUMMARY

Report:	Texas Tech University Laboratory Explosion
Recommendation Number:	2010-05-I-TX-R1
Date Issued:	September 30, 2011 (released October 19, 2011)
Recipient:	Occupational Safety and Health Administration
New Status:	Closed- Acceptable Action
Date of Status Change:	September 30, 2013

Recommendation Text:

Broadly and explicitly communicate to the target audience of research laboratories the findings and recommendations of the CSB Texas Tech report focusing on the message that while the intent of 29 CFR 1910.1450 (Occupational Exposure to Hazardous Chemicals in Laboratories Standard) is to comprehensively address health hazards of chemicals, organizations also need to effectively implement programs and procedures to control physical hazards of chemicals (as defined in 1910.1450(b)). At a minimum:

- a. Develop a Safety and Health Information Bulletin (SHIB) pertaining to the need to control physical hazards of chemicals; and*
- b. Disseminate the SHIB (and any related products) on the OSHA Safety and Health Topics website pertaining to Laboratories (<http://www.osha.gov/SLTC/laboratories/index.html>)*

Board Status Change Decision:

A. Rationale for Recommendation

On January 7, 2010, a graduate student within the Chemistry and Biochemistry Department at Texas Tech University (TTU) was severely injured after the chemical he was working with unexpectedly detonated. The CSB investigated this incident and found systemic deficiencies within TTU that contributed to the incident. Specifically, the physical hazard risks inherent in the student's research were not effectively assessed, planned for, or mitigated; the university lacked safety management accountability and oversight; and previous incidents with preventative lessons were not documented, tracked, and formally communicated.

As part of its investigation, the CSB found that Texas Tech's and several other universities' laboratory safety management programs were modeled after OSHA's Occupational Exposure to Hazardous Chemicals in Laboratories Standard (29 CFR 1910.1450). OSHA's standard is largely focused on health hazards resulting from worker exposures to toxins and carcinogens, however, and devotes little attention to the physical hazards in laboratories, including those presented by combustible liquids, compressed gases, explosives, flammables, and so on.

In order to ensure laboratories comprehensively address both health and physical hazards, the CSB recommended that OSHA communicate the findings of its Texas Tech Case Study and emphasize the importance of addressing physical hazards. Specifically, the CSB recommended that OSHA develop a Safety and Health Information Bulletin (SHIB)¹ on this subject and make it available on their website.

¹ A Safety and Health Information Bulletin, or SHIB, is a mechanism by which OSHA informs its OSHA offices and the general public of significant occupational safety and health issues. OSHA Directive CPL 02-00-065 prescribes procedures for the development and dissemination of SHIBs. See

B. Response to the Recommendation

OSHA did not issue a SHIB as envisioned by the Board, but instead revised Appendix A of the Occupational Exposure to Hazardous Chemicals in Laboratories Standard (29 CFR 1910.1450).² OSHA stated that updating this standard, which CSB investigators found is often used in the development of university Chemical Hygiene Plans (CHPs), would have a “much greater impact” than developing a SHIB. Appendix A of the standard was revised to place more emphasis on the need to evaluate physical hazards present in laboratories, and to present the following seven key lessons identified by the CSB:

- “1) Ensure that research-specific hazards are evaluated and then controlled by developing specific written protocols and training.
- (2) Expand existing laboratory safety plans to ensure that all safety hazards, including physical hazards of chemicals, are addressed.
- (3) Ensure that the organization’s EHS office reports directly to an identified individual/office with organizational authority to implement safety improvements.
- (4) Develop a verification program that ensures that the safety provisions of the CHP are communicated, followed, and enforced at all levels within the organization.
- (5) Document and communicate all laboratory near-misses and previous incidents to track safety, provide opportunities for education and improvement to drive safety changes at the university.
- (6) Manage the hazards unique to laboratory chemical research in the academic environment. Utilize available practice guidance that identifies and describes methodologies to assess and control hazards.
- (7) Written safety protocols and training are necessary to manage laboratory risk.”

OSHA’s safety and health page devoted to laboratories prominently exhibits a link to the revised Appendix, as well as a link to a Laboratory Safety Guidance document the agency released in October 2011.³

C. Board Analysis and Decision

Because OSHA reported actions that are consistent with the intent of this recommendation, the Board changed the status of this recommendation to “Closed- Acceptable Action.”

https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=3019. Accessed August 15, 2013.

² *Federal Register* 78(14): 4324-31. The revised Appendix is also available on OSHA's website at https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10107. Accessed August 15, 2013.

³ See <https://www.osha.gov/Publications/laboratory/OSHA3404laboratory-safety-guidance.pdf>. Accessed August 15, 2013.