

Industrial lab safety committees and teams — Case study

In order to maintain safe working conditions in their laboratories and establish a strong safety culture, many industrial companies have established safety committees and emergency response teams. These groups involve several lab employees, and everyone participates in regular safety meetings at the department level. In this case study, two research facilities in the same organization have nearly identical committees and teams. There is some variation in how the committees are organized; that variation can influence how a committee carries out its mission and involves employees as active participants in safety programs. Committees keep the research community focused on safety; the teams respond to emergencies and other safety incidents.

By Kenneth P. Fivizzani

The safety culture of industrial chemical companies can be reflected in the safety policies and procedures established by each company. One important aspect of a safety program is the establishment of safety committees and teams,^{1,2,3} which designate groups of individuals to address certain safety concerns in the organization. These safety committees and teams frequently establish or modify safety policies and procedures.

Nalco Company (now Nalco Water, an Ecolab company) specializes in industrial water treatment and process improvement. Nalco has two major

research facilities in the United States, one in Naperville (NAP), Illinois and the second in Sugar Land (SL), Texas. International research labs are located in Leiden, Netherlands and in Singapore. The Naperville facility employs a research staff of 250–300. The Nalco Water headquarters are at the same location and employ several hundred corporate employees, including the Safety Health and Environment department (SH&E). The Sugar Land facility employs a research staff of about 150 employees, and has both a manufacturing plant and a pilot plant at the same location. The descriptions and reflections in this document represent the organizational structure in the 2000–2010 years. The safety committees and teams discussed are from the Naperville and Sugar Land research facilities.

NAPERVILLE LABORATORY SAFETY REVIEW BOARD (NLSRB)

The NLSRB is a standing committee having responsibility for safety issues related to the Naperville Technical Center. There are three Technical Directors (department managers, also known as R&D Managers) who serve staggered two-year terms on the committee. One serves as the Chair of the committee. The second is the Vice Chair, who will serve as Chair in the following year. The Vice Chair also

serves as liaison to the Emergency Response Team (see below), dealing with managers during an emergency response. The third Technical Director serves a two-year term as chair of the Research Practices Committee (see below) that reviews new chemistry and equipment applications.

Other NLSRB members include: the chemical hygiene officer (CHO); a SH&E representative, typically the Corporate Safety Manager or designate; the Director of Facility Management or designate; and the Chair of the Chemists' Committee (see below). The NLSRB meets monthly; meeting minutes are issued to all Technical Directors (TD, usually 12–15 managers), Research Associates (technical ladder equivalents to TD), and the Research Management Team (TDs and Research Vice Presidents).

SUGAR LAND RESEARCH AND OFFICE COMMITTEE (SLROSC)

The SLROSC is responsible for safety issues within the Sugar Land Research and Offices. The Division VP of Research is the permanent chair of this committee. All of the Technical Directors (TDs, usually six or seven), including the TD of the Pilot Plant, are permanent members of the committee. Other SLROSC members include: the CHO; a SH&E representative, typically an industrial hygienist or other

¹ *Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards*, National Research Council, National Academies Press, Washington, DC, 2011, pp 18–19. The list of Chemical Hygiene Responsibilities includes several areas that could be covered by a safety committee.

² *Creating Safety Cultures in Academic Institutions: A Report of the Safety Culture Task Force of the ACS Committee on Chemical Safety*, American Chemical Society, Washington, DC, 2012, pp 35–36 and 46.

³ *Essentials of Safety and Health Management*, R. W. Lack, Ed., CRC Press, Boca Raton, FL, pp 67–72.

safety professional; a Facility Management representative; and the Chair of the Chemists' Safety Committee (see below).

The SLROSC meets monthly; meeting minutes are issued to committee members and some corporate managers based in Sugar Land. The CHO is based in Naperville and attends 4–6 meetings a year in person and the other meetings by phone.

The NLSRB and the SLROSC have a joint meeting annually to share accomplishments and current issues. This meeting takes place via teleconference.

OBSERVATIONS AND COMPARISONS OF NLSRB AND SLROSC

These two committees serve the same function at their respective facilities. The differences in structure, especially concerning managerial membership on the committees, have pluses and minuses on the function of the committee. In Naperville, there are three TDs, each serving a two-year term. All TDs are expected to serve on the NLSRB; having experience in safety leadership or a positive attitude toward safety is not a factor in their selection. The Research Practices Chair learns about new reactions and equipment at the leading edge of research. The Vice-Chair learns much more about safety policies and procedures as well as issues throughout research. The Chair can promote new policies or update existing policies. Many of the TDs who serve on the NLSRB are energetic at the start of their service and may become safety champions as a consequence of their service. All researchers on the committee get to know corporate safety support personnel (SH&E, Facilities Management) and learn more about what these corporate support staffers do. Because no Research Vice President serves on the committee, there may be proposals that have to be cleared with top management in Research. This has not been a major limitation in the operation of this committee.

In Sugar Land, all of the Research Managers (VP and all TDs) are permanent members of this committee. So the meetings of this committee are a regular part of their management careers. The meetings take on more of a matter of fact flavor. The indefinite terms of some of the non-manager committee members adds to this familiarity. There is significantly less turnover of committee members. However, since every Research manager is a permanent member of the committee, approval and implementation of new policies and procedures is relatively straightforward and quick. Communication back to the Research departments is prompt. All the managers are on board with new concerns and resolutions because they have all been involved in the deliberations. The VP and TDs speak with a united voice on safety. The Chemists' Safety Chair can address all managers about the concerns and suggestions of bench scientists.

CHEMISTS' COMMITTEE (NAP)

The Chemists' Committee is comprised of non-managerial researchers drawn from all the research departments in Naperville. A member of the Facility Management department also is on this committee. The chairman of this committee represents the research community on the NLSRB. The chair is selected by the CHO and the NLSRB Chair. The members serve staggered three-year terms. The committee meets monthly. Although members may be chemical engineers, microbiologists, technicians, metallurgists as well as chemists, they have not objected to the committee being called the Chemists' Committee.

Chemists' Committee members have two primary functions. The first is to act as liaison between researchers and the NLSRB. In this capacity, they transmit concerns and ideas related to laboratory safety to the NLSRB via the chair; and they inform the individual departments about board decisions through departmental safety meetings. A second function is to conduct lab inspections annually for each research department.

CHEMISTS' SAFETY COMMITTEE (SL)

The Chemists' Safety Committee is comprised of non-managerial researchers from all of the research departments in Sugar Land. This committee's responsibility is to enhance communication between the research community and the SLROSC, resulting in an increase in safety awareness. The committee holds monthly meetings to address researchers' safety concerns and either resolves situations or proposes solutions and recommendations to the SLROSC. Committee members communicate the status of all issues in progress to the research community during monthly safety meetings. The chair of the committee is a member of the SLROSC.

Membership on this committee is more fluid than on the Naperville Chemists' Committee. Each department has a representative on the committee, but members can serve an indefinite term subject to the approval of their department managers. Committee members have a voice in selecting the chair; the assignment is ultimately made by the SLROSC.

OBSERVATIONS AND COMPARISONS OF CHEMISTS' COMMITTEE AND CHEMISTS' SAFETY COMMITTEE

Both of these committees seem to struggle with identifying what issues they should be addressing and what new practices they should be promoting. In part, this could be attributed to the average age and experience of the members. Department managers often assign newer department members to these committees. These younger members have not developed enough safety expertise to recognize opportunities for improving the safety program or culture. However, because no departmental managers are present, committee members are less inhibited about discussing safety concerns among the bench researchers. Those concerns can be conveyed to the NLSRB and SLROSC by the chair of the Chemists' committee and the chemical hygiene officer, who are members of the management

committee. My recommendation for these committees would be to encourage some experienced researchers to participate in the work of these committees, even if they have already served on another safety committee or team.

The Chemists' Safety Committee in SL was better able to identify some relevant issues for two reasons. Having a manufacturing site in the same location meant that there were larger amounts of chemicals on-site. There was considerably more traffic (vehicles and people) everywhere. Supporting staff, such as maintenance and SH&E personnel, could be located in the plant; and there are specific rules about walking through the plant to access these support personnel. The second reason for relevant issues is that SL research and manufacturing involve primarily petroleum-based chemicals. So there routinely are larger amounts of flammable and combustible materials in the labs and in the plant. Lab quantities of products or precursors of products were often obtained from the plant; this resulted in transfer and transportation concerns. As noted earlier, some members of this committee served for extended periods of time and became more experienced in the potential hazards of laboratory research.

RESEARCH PRACTICES COMMITTEE

This committee exists to assure the safe introduction of new chemistry and new equipment into the research laboratories. Both the Naperville and Sugar Land laboratories have a site chairperson of this committee. Whenever a researcher intends to study new chemistry (i.e., chemistry new to Nalco) or to obtain new equipment (purchased or built in-house), that researcher must receive approval from the Research Practices Committee. Questionnaires have been designed for new chemistry and new equipment. The committee chair assigns a case number and schedules a review by members of the committee when necessary.

In general, researchers are not eager to submit new chemistry requests. If

the chemistry has been done somewhere else, the researcher tends to assume that any hazards would have been detected at the other location. In a given year, only a few requests are submitted by the research staff. The pilot plants (Chicago and Sugar Land) are more demanding about getting new chemistry questionnaires.

EMERGENCY RESPONSE TEAM (ERT)

Both NAP and SL have an Emergency Response Team. This team is responsible for handling any emergencies related to chemistry and chemicals in the facility. In the event of a chemical emergency, the ERT Site Commander is responsible for ensuring that the emergency is handled properly and that the facility, or a specific area, is safe to reenter after the emergency has been handled. The ERT Site Commander informs the Emergency Director (Director of Facility Management or designate) regarding evacuations, medical emergencies, and additional equipment or personnel required.

During a chemical emergency, the ERT Site Commander has total authority to decide what safety precautions are necessary for employees in the facility. Any member of the ERT may direct that a floor, an entire building, or the entire facility be evacuated immediately. Such an evacuation notice must be obeyed without question by all employees. Employees who have information pertinent to the emergency must identify themselves and be available to the ERT Site Commander for consultation.

Typical terms of ERT service in NAP are around three years. In SL, there are ERT members from the plant who serve for longer terms; the team only needs a couple of researchers as members to handle lab emergencies. ERT members receive standard HAZWOPER training. ERT members play a significant role in the lab safety programs in both facilities. They quickly develop knowledge of hazardous materials and skills needed for emergency response and cleanup. They are respected by the research community.

MEDICAL EMERGENCY RESPONSE TEAM (MERT)

Both NAP and SL have a Medical Emergency Response Team that responds to any medical emergency at the facility. They are trained in first aid, CPR, and use of defibrillators. Team members have various levels of medical training. The team provides immediate first aid care in the event of an injury and will work with fire department paramedics during medical emergency situations. Researchers on this team can provide SDS information on materials that may have contributed to the emergency. Both facilities have good working relationships with local paramedics and medical facilities.

EMERGENCY EVACUATION TEAM (EET) — NAPERVILLE

The Emergency Evacuation Team consists of Building Captains and Floor Monitors. The team's responsibility is to evacuate all personnel from the affected buildings in the event of an emergency. Team members explain emergency procedures to employees when questions arise and reinforce procedures during an emergency. This team is also responsible for providing assistance in special emergency situations not necessarily related to evacuations. For example, the EET may assist in restricting access to a specific area within the laboratory or they may clarify procedures during weather emergencies. Terms of service are indefinite. There is one annual training session for team members.

DEPARTMENTAL SAFETY PROGRAM

Every research department at Nalco is required to have a monthly safety meeting and carry out a monthly safety inspection. Any safety topic can be discussed at the safety meeting, including topics concerning the use of hazardous chemicals. SH&E publishes a catalogue of audio/visual resources available for use in safety meetings. In most research departments, the content and presentation of safety material

is done by individual members of the department. Many researchers travel frequently to customer sites for site-specific difficulties or new product trials. Each researcher is required to attend twelve departmental safety meetings per year. If they miss their own department's meeting, they have to attend another department's safety meeting. One unanticipated advantage of this requirement is that researchers bring interesting topics or presentations back to their own department. This cross-pollination of safety ideas serves everyone in the research community. Support staff in each department (e.g., administrative staff, IT, interns, summer students) also have to attend the departmental safety meetings. This results in discussion of non-lab topics such as driving safety, electrical safety, slips, trips and falls. In addition, researchers are expected to ensure the safety of corporate

employees, visitors, vendors, and contractors in the laboratory.

SAFETY SERVICE EXPECTATION

Each research professional (scientists and technicians) understand that they may be appointed to one of the safety committees or teams. They are usually asked to serve a single term on only one of the following teams: Chemists' Committee, ERT, or MERT. A research professional may volunteer to serve for a longer period or on a second committee with management approval.

SUMMARY

Industry implements site-specific safety policy and safety culture with assistance from several lab safety committees and teams. All research employees,

technical and support staff, participate in safety programs and serve on the committees or teams. New employees can see quickly the importance of safety at the facility. The committees keep the research community focused on safety as an essential part of research activity. The safety teams work at specific tasks or projects to maintain a safe workplace.

***Ken Fivizzani** is affiliated with the ACS Division of Chemical Health and Safety, retired in 2009 from Nalco Company (now Ecolab), where he was the chemical hygiene officer for nineteen years. He is a chemistry graduate of Loyola University Chicago and the University of Wisconsin – Madison. He is a Past Chair of CHAS, the ACS Committee on Chemical Safety, and the ACS Chicago Section (e-mail: kfivizzani@wowway.com).*