



**MARY KAY O'CONNOR
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The Future of the U.S. Chemical Safety and Hazard Investigation Board (CSB): Opportunities and Challenges¹

Rick Engler*
Board Member, CSB²
U.S. Chemical Safety and Hazard Investigation Board
1750 Pennsylvania Avenue, NW
Washington, D.C. 20006, USA

*Presenter E-mail: rick.engler@csb.gov

Abstract

Major, preventable chemical incidents in the United States continue, many of which have caused injuries, fatalities, community harm, and damage to industrial infrastructure. Since 1998, the U.S. Chemical Safety Board (CSB) has investigated more than 130 such incidents across the nation and has issued many recommendations that, once adopted, have led to safety improvements. At the same time, CSB faces ongoing challenges concerning funding, staffing, and how to best address underlying organizational causes of incidents.

Keywords: CSB, safety recommendations, organizational causation

As a Member of the United States Chemical Safety Board (CSB), I talk with the families of loved ones who have lost their lives in horrific chemical disasters. Families want to know what caused their loss. And they often want to discuss how to prevent future tragedies.

These conversations prompt reflection on the major national changes needed to achieve CSB's vision of "a nation safe from chemical disasters".

Thus, my purpose today, is to address some central challenges for chemical safety -- and how CSB is addressing them.

¹ References available upon request. Find CSB investigation reports and recommendations at www.csb.gov.

² Disclaimer: The views and opinions expressed herein are those of the author, and do not necessarily reflect the views of the U.S. government, or any agency thereof, including the U.S. Chemical Safety Board. This document is a work product of CSB Board Member Rick Engler and is not an official publication of the US CSB.

The concept of an independent federal agency to investigate the causes of major chemical incidents was prompted by horrific disasters, among them the 1989 Phillips incident in Pasadena, Texas in which 23 people died and more than 300 were injured.

Congress created CSB in 1990 "...to investigate accidents and recommend measures to reduce the risk of catastrophic events." Presidents Bush and Clinton, however, opposed its funding, claiming that its role was duplicated by OSHA and EPA. After efforts by labor unions, environmental organizations, some corporations, and eventually from industry trade associations, CSB was finally funded and began operating in 1998.

CSB conducts investigations of chemical releases into the air from industrial facilities. The most comprehensive CSB investigations address multiple incident causes and circumstances, including physical factors such as equipment failure, as well as gaps in industry consensus standards, management systems, and government regulations.

CSB is not a regulatory agency and does not issue violations, consent orders, or financial penalties. CSB issues *recommendations* and their strength rests with our work's scientific integrity and effective advocacy.

During the CSB's 21-years we have issued a total of about 100 reports, interim reports, bulletins, and case studies. We've made 841 safety recommendations to facility management, trade associations, standard setting groups, unions, and regulatory agencies. And we have produced many videos on specific incidents.

Safety accomplishments catalyzed by CSB recommendations include:

- After a fertilizer grade ammonium nitrate storage facility incident that killed 15 and injured 260, the Federal Emergency Management Agency created a training program on this hazard for emergency responders.
- After an incident that injured 36 people, including six fire fighters, New York City revised its outdated fire prevention code for hazardous materials.
- After an explosion that killed six workers at a natural gas facility, the National Fire Protection Association and the International Code Council developed codes to prohibit flammable gases for use in "gas blows" to clean piping.
- After an oil refinery disaster that killed 15 contract workers and injured 180 others, many refineries removed temporary contractor trailers that were close to operating units.
- After an explosion that killed four workers at a laboratory, the Accreditation Board for Engineering and Technology, Inc. (ABET) revised the chemical engineering curriculum to include components on process safety and reactive hazards. After a graduate student

was severely injured in a laboratory explosion, the American Chemical Society published guidance to prevent hazards in research labs.

- After a refinery incident that led 15,000 residents to seek medical evaluation, CSB urged California to strengthen its PSM rule for its 14 refineries. California then adopted the most comprehensive refinery safeguards in the nation, which can offer valuable lessons for reforming the federal PSM standard.

CSB videos have been viewed more than 17 million times on YouTube, where we have over 80,000 subscribers. They are widely used in training in the U.S. and internationally. Recent videos depict the impact of increasingly extreme weather on a chemical plant and the hazards of unregulated onshore oil and gas drilling.

CSB faces major external challenges, among them that:

- 1) There is no data base for recording chemical incidents. Thus we cannot understand incident trends.
- 2) Industry is under intense production pressures that can continue to undermine safety; and
- 3) Necessary public safeguards are under assault.

I'll talk about each of these challenges – and what CSB can do to address them.

CHEMICAL INCIDENTS CONTINUE WITHOUT KNOWLEDGE OF TRENDS

The primary challenge for the CSB is that chemical incidents are frequent. Many cause deaths, injuries, environmental impacts, and significant property damage. We can investigate a small subset of these incidents given that CSB is a very small agency, with about just 40 staff positions. Currently, we have 10 open investigations.

Incidents occur at small, little known firms, such as at Midland Resource Recovery in Phillipi, WV, where three people were killed in 2017 in explosions involving reactive chemicals. The founder and president of the company, which decommissions odorant equipment used in natural gas service, was a victim. They also occur at huge multinational corporations, such as DuPont, Chevron, and ExxonMobil.

At DuPont's La Porte, TX facility in 2014, four workers died and three other workers were injured from their exposure to methyl mercaptan. Two workers were killed when the chemical drained from open valves, filling a room with vapor. One of those workers made a distress call, and two more workers died while responding. DuPont, a firm with a worldwide safety reputation, has had multiple process safety incidents. This suggests that other major firms, not just supposed "outliers", are vulnerable.

While we definitively know that incidents continue, there is no contemporaneous, comprehensive, and publicly accessible database of major chemical incidents at industrial facilities. The EPA's Risk Management Program (RMP) data base, which includes about 12,000 facilities, shows continuing chemical incidents, many with offsite impacts (see table on page 10).

Unfortunately, this EPA data does not accurately show whether the number of these incidents are increasing, decreasing, or staying the same relative to the number of covered facilities.

According to EPA's 2018 Regulatory Impact Analysis, "Although the accident histories submitted with RMPs have shown a reduction in the frequency of accidents since the beginning of the program, there continue to be serious chemical releases. RMP data for 2004 through 2013 show that each year there are an average of approximately 150 accidents with reportable impacts."

Yet EPA also maintains that there is now a "...low and declining accident rate at RMP facilities..." EPA also notes, however, that "Past experience with RMP facility accident reports suggests that following the next 5-year reporting wave... the current 2014, 2015, and 2016 accident totals will increase."

Moreover, EPA explains only the year and number of accidents occurring in that year (and some totals and averages). Their analysis does not indicate a rate calculation – the number of accidents that occurred in a year divided by the number of facilities that could have had an accident during the year. EPA uses only the static number of reporting facilities from the 2015 RMP database without updating this number, which fails to account for manufacturing plant closings.

- One opportunity for CSB is to issue an incident reporting rule, as directed by our enabling law. On February 4, 2019, a U.S. District Court judge ordered CSB to issue, within one year, a regulation requiring facilities to report chemical incidents to CSB. This regulation and the resulting data base can help everyone, over time, understand chemical incident trends.

ONGOING PRODUCTION AND COMPETITIVE PRESSURES

Corporate leaders truly want safe operations and zero incidents. Most, however, face enormous bottom line production pressures. Often, meeting obligations to stockholders is paramount.

It's common knowledge that corporate leaders control investment decisions. They decide what products are made and where they are produced, the choice of technologies, production targets, preventive maintenance allocations, staffing levels, and workforce training. They choose their facility and enterprise levels of risk tolerance and allocate budgets for safety. In a challenging economic environment, they make key decisions that determine safety outcomes.

Executives themselves are concerned. Three of every four executives felt operational risks in their companies were inadequately managed, according to a 2018 report by DuPont Sustainable Solutions. Their report also found that "process safety" was one of the least discussed topics at Board meetings.

- An opportunity for CSB stems from our investigation of the 2010 Macondo well disaster in the Gulf of Mexico when the Deepwater Horizon rig blew out, leading to explosions and fires that killed 11 workers and massive marine and costal damage. A CSB recommendation to the Bureau of Safety and Environmental Enforcement (BSEE) in the Department of

Interior called upon the agency to draw upon the best available global standards and practices and develop guidance addressing the roles and responsibilities of corporate board of directors and executives for effective major accident prevention.

After BSEE rejected CSB's recommendation, CSB committed to issuing this important and broadly applicable guidance. This guidance could urge offshore oil and gas operators and contractors to adopt effective process safety systems, ensure board competency and training, enable reporting by employees of incidents, near misses, and "what could go wrong" to top executives, build strong worker participation programs, assess executive compensation programs that incentivize production over safety, and address other critical matters.

Hearing the views of corporations, unions, standard setting organizations and others with serious commitments to process safety will be important for issuing the best possible CSB guidance.

THE SAFEGUARDS THAT PROTECT ALL OF US ARE UNDER ASSAULT

Since their adoption, federal regulatory safeguards to prevent chemical incidents have not been fully modernized. And even modest improvements are now threatened.

After the 2013 West Fertilizer Company disaster, President Obama issued an Executive Order mandating federal agencies, including OSHA and EPA, to "...consider whether to pursue an independent, high-level assessment of the U.S. approach to chemical facility risk management to identify additional recommendations for all levels of government and industry to reduce the risk of catastrophic chemical incidents in the future". This order, however, did not prompt serious debate about major reform.

The Executive Order led to forward steps, most notably a revised EPA RMP rule that was issued in the last days of the Obama Administration. Today, reforms to OSHA's Process Safety Management (PSM) standard languish on OSHA's regulatory agenda for "long term action".

Now the EPA is moving to dismantle even the modestly improved 2017 RMP rules. They plan to issue a final rule, currently under review at the Office of Management and Budget that rescinds provisions on safer technology and alternatives analyses, third-party audits, incident investigations, and public access to information. EPA's own analysis admits that their rule will have a disproportionately negative impact on people of color and low income communities nearby industrial facilities.

Unfortunately, dismantling these steps forward has received total support from industry trade associations.

- As an independent agency, CSB's opportunity is to continue our work based on a solid scientific and analytical footing -- and to urge effective government regulation when needed. CSB has called for a stronger, not weaker, RMP and PSM rules. Our recent reports continue to call for other sensible safeguards, such as new regulation of the onshore oil and gas drilling industry that was exempted from PSM.

Continuing disasters, intense corporate bottom-line pressures, and threats to public safeguards, means that CSB's work is as important as ever.

CSB is moving forward to issue an incident reporting rule, produce guidance for corporate boards and executives in the offshore oil and gas industry, and to call for needed safety rules.

In addition to these actions, please consider four additional proposals. All four reforms would increase the authority of those with safety responsibilities.

First, chemical engineers and other safety professionals need greater influence, as suggested by our investigation of the 2012 incident at Chevron in Richmond, California where the requests of company engineers to prevent corrosion were not heeded before a loss of containment led 12,000 residents to seek medical evaluation. HSE professionals should have clear lines of reporting to top executives and greater authority over safety decision making.

Second, corporate Boards should have at least one member with professional expertise and experience and a clearly defined role to receive reports of incidents, near misses, and process safety risks and power to bring these issues to the attention of the entire board. This was a CSB recommendation to BP after the 2005 Texas City refinery disaster which killed 15 contract workers.

Third, according to a recent CSB Safety Digest, "worker participation is essential to improving process safety and preventing incidents at facilities with hazardous chemicals." These facilities should have, by law, a safety, health, and environment committee with equal representation by management and workers. In union represented facilities, to comply with the National Labor Relations Act, unions must select the employee committee members. Committees should have authority to investigate hazards, incidents, and near misses, to help develop stop work authority programs and other policies, and to participate in all aspects of chemical safety. There are clear precedents for worker engagement. The 2017 California OSHA PSM standard covering oil refineries offers opportunities for worker participation in all aspects of the standard. Sixteen state laws require safety committees. Some labor-management contract agreements establish full-time worker safety and/or process safety representatives.

And fourth, Local Emergency Planning Committees (LEPCs) deserve what they need to do their jobs to help prevent incidents, not only respond to them. The Emergency Planning and Community Right to Know Act was enacted to help accomplish this – but Congress provided no funding or funding mechanism. LEPCs should have a budget to hire experts, train their members, audit plants, and expand public engagement, including with workers and the low income and communities of color so often disproportionately harmed by hazardous releases.

CSB's investigation of the 2013 West, Texas ammonium nitrate disaster, which killed 12 volunteer firefighters, underscores the urgency of providing our responders adequate resources.

I hope the CSB will consider these four proposals in the future, whether as relevant recommendations stemming from incident investigations or through new safety studies of key issues.

I encourage you to consider and debate these proposals, as well as your own ideas.

Achieving any major changes will be hard. It will take time. But the alternative – more preventable disasters – is unacceptable.

In closing, thank you again for your support of CSB. It's made a huge difference. And please...

- Sign up to get the latest information at csb.gov
- Read our investigation reports and watch our videos
- Share them with colleagues, executives, and your workforce;

And

Be an engaged stakeholder – if you have a suggestion or see a need for CSB action – make sure CSB Board Members hear it.

Finally, thank you for what you do every day to protect workers, our communities, and our industries -- and for debating what it will take to achieve a nation safe from chemical disasters.

Year	Impact Accidents
2004	197
2005	152
2006	140
2007	204
2008	168
2009	149
2010	128
2011	138
2012	118
2013	123
2014	128*
2015	113*
2016	99*
Total (2004-2013)	1,517
Total (2005-2014)	1,448
Total (2006-2015)	1,409
Total (2007-2016)	1,368
Average/Year (2004-2013)	152
Average/Year (2005-2014)	145
Average/Year (2006-2015)	141
Average/Year (2007-2016)	137

*May increase after the 2019 RMP reporting wave occurs.

Source: Regulatory Impact Analysis Reconsideration of the 2017 Amendments to the Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act, Section 112(r)(7) U.S. Environmental Protection Agency (EPA) Office of Land and Emergency Management (OLEM) Office of Emergency Management (OEM), April 27, 2018, page 34 (Exhibit 3-7).