Comments submitted in response to Federal Register Notice - Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act, Section 112(r)(7); Rule Modernization Under Executive Order 13650; Request for Information (July 31,2014) - Docket Number EPA-HQ-OEM-2014-0328

On behalf of 156 organizations representing the Coalition to Prevent Chemical Disasters, we are responding to Docket ID No. EPA - EPA-HQ-OEM-2014-0328. We respectfully submit these comments on October 29, 2014.

Our comments begin with a summary, followed by an analysis of costs and benefits, then analysis and recommendations regarding alternatives assessments, conversion to safer alternatives, the need to address disproportionate impacts, information disclosure, the New Jersey and Contra Costa County programs, worker and community training, and answers to some additional specific questions in the RFI. EPA's consideration of these comments should in no way obviate the Agency's need to consider all comments and oral testimony submitted previously at listening sessions, webinars, and in docket submissions by this broad-based coalition and each individual constituent.

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I. Summary

President Obama's August 1, 2013 Executive Order (EO) #13650 on Chemical Facility Safety and Security directs federal Agencies to modernize chemical plant safety and security policies in order to protect workers and communities. Over a year has passed since the EO was introduced and federal Agencies are now conducting a third public comment period with little result in actual policies to prevent disasters. It is critical that this administration modernize existing policies before leaving office.

We continue to urge the Environmental Protection Agency (EPA) to use its existing authority under the 1990 Clean Air Act to prevent chemical disasters as soon as possible. Solutions exist and the best way to prevent disasters is to require chemical facilities to assess alternatives and use safer chemicals and processes whenever they are available, effective, and affordable. The only way to ensure identification of and conversion to safer chemicals is to activate the Clean Air Act's "Bhopal" provisions in sections 112 (r)(1) and 112 (r)(7)(A). By activating this authority, the EPA can require dangerous chemical facilities to use the safest cost-effective chemical process available to eliminate the potential for catastrophic chemical releases.

In issuing the EO, President Obama made it clear that existing federal and state programs were not protecting the safety and security of the workers or residents of West, Texas or any other community. Existing programs have failed because none of the existing rules or safety standards require facilities to identify or adopt inherently safer technologies and systems. Instead, current programs are limited to "managing" or "mitigating" risks rather than eliminating unnecessary hazards or dramatically reducing their inherent danger.

Specifically, the EPA's Risk Management Program (RMP) lacks fundamental requirements to protect public health and the environment from catastrophic chemical releases through common sense prevention measures. For example, although the current RMP rules require chemical facilities to report their worst-case disaster scenarios to the EPA and make preparations for future disasters, facilities are not required to identify whether safer chemicals or processes are available that could reduce or remove the underlying hazard.

The risks to Americans are extraordinarily large and disproportionate to many. In an analysis of the EPA's RMP, the Congressional Research Service found that 473 chemical facilities pose a catastrophic hazard to 100,000 or more people. Together these facilities put more than 100 million people in the U.S. at risk of a chemical disaster, each of which could be far more deadly than the West, Texas explosion.[1]

EPA's current RMP program and related policies and activities have failed to address the disproportionate impacts of hazardous chemical facilities in communities of color and low-income communities, as evidenced by the fact that the percentage of Blacks in

[1] http://www.americanprogress.org/issues/security/report/2008/11/19/5203/chemical-security-101/

the fence-line zones (1/10 the size of the full worst-case scenario disaster zone) around 3,433 RMP facilities is 75% greater than for the U.S. as a whole, the percentage of Latinos is 60% greater, and the poverty rate is 50% higher.[2] The Agency is effectively denying those communities and populations the benefits of the RMP program and allowing discrimination to continue.

The EPA has unambiguous authority to issue new requirements in the form of regulations, guidance and standards. This framework was originally proposed by the EPA in 2002 until blocked by President Bush's White House.[3] The EPA acknowledged its authority in an August 1, 2013 letter from the EPA to Congress.[4]

We want to see the EPA move swiftly to:

1) Require all chemical facilities to conduct and submit an alternatives assessment to determine the availability of safer available chemical processes and/or inherently safer technologies (IST).
2) Require all RMP facilities to adopt the use of safer chemicals and processes wherever feasible by a date certain with priority enforcement of certain facilities including but not limited to those that put large populations at risk, or have had recent accidents or are in high hazard industry sectors.
3) Ensure the protection of disproportionately at risk populations and underserved communities.
4) Ensure accountability by requiring transparency of safer alternatives analyses and facility claims of infeasibility of available safer alternatives.
5) Ensure that all facility employees have whistleblower protection (i.e. ability to anonymously report safety concerns) and participate in inspections, participate in alternatives analyses assessments and have adequate education and training to participate, and that communities are fully trained and empowered to participate in planning and in reviewing assessments and decisions.

II. Costs of Incidents, Cost Savings and Economic Benefits from Safer Chemicals and Processes

Consequences from the April 17, 2013 West, Texas tragedy[5] catalyzed the Federal Working Group's efforts, illustrating how "unexpected failures" carry monumental life, livelihood and infrastructure costs to workers, emergency responders, and communities living near these facilities. Such events can and should force formal evaluations of the effectiveness of the current system of chemical safety. We must also acknowledge the potential for catastrophic losses far exceeding those of West, Texas that exist across the country -- many of which have known, cost-effective hazard-reducing alternatives.

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2 http://comingcleaninc.org/assets/media/images/Reports/Who%27s%20in%20Danger%20Report%20and%20Table%20FINAL.pdf

3 https://www.documentcloud.org/documents/332410-epachemsecurityrolloutjune02.html

4 http://www.documentcloud.org/documents/784013-epa-resps-to-pompeo-8-1-13.html

5 http://www.csb.gov/west-fertilizer-explosion-and-fire-/

We are persuaded by the long history of analyses by MIT Professor Nicholas Ashford, who posits an apt analogy for costs and benefits in his recent submission in response to the RFI.

> The adoption of inherently-safer technologies works like insurance; since it is not known in advance which specific firms in a particular risk category will have a chemical accident, the only way to ensure that accidents rates are lower for firms in the category is for every firm to adopt inherently-safer technology in that category. Like drivers who complain that they have been paying insurance every year but never had an accident, this confuses individual liability with collective liability. Both the reluctance of individual firms to adopt inherently safer alternatives and the reluctance of the government to require the adoption of collective cost-saving inherently-safer alternatives suffer from this problem. Thus, the focus of the Executive Order on collecting information on the costs and benefits of individual firms is misguided. Certainly the enormous costs in term of injuries, deaths, and property values demand a more modern and different approach than that which has been forthcoming.[6]

EPA's RFI in Section IIB seeks specific input on potential costs and economic impacts of amending regulatory requirements of specific elements and entities affected by possible RMP amendments. We urge the EPA to be more cognizant of, and transparent about, the accruing costs for incidents that have not been prevented by the current system of regulations, compliance enforcement and private practice. We urge EPA to systematically gather and maintain a more accurate database of the comprehensive costs of incidents and incident potentials. Such data prods the affected parties towards redefining better practice and embracing more rigorous and effective regulatory amendments to ensure adherence to better practice. An aggregate baseline of incident costs, potential costs, and solutions, while difficult to measure and estimate precisely, is one basis for judging aggregate private sector expenses incurred and avoided by meeting myriad improvements to the scope and context of an amended RMP.

We urge EPA to acknowledge and affirm the economic benefits associated with installing inherently safer designs to the communities, workers and businesses at risk from catastrophic chemical failures. EPA's principal focus should be to require managers of chemical facilities to assess and implement the opportunities for adoption of Inherently Safer Technologies (IST) and Inherently Safer Design (ISD) approaches, and make transparent the changes used to eliminate the catastrophic risks from hazardous chemicals and processes for workers and communities.

Incident Costs Are Too High

Where catastrophic hazards exist, facilities experience incidents whose costs are extraordinarily high, especially when managers fail to adhere to best safety practices.

[6] Comments to EPA Docket EPA-HQ-OEM-2014-0328 submitted by Nicholas A. Ashford, Professor of Technology and Policy, Massachusetts Institute of Technology, on October 22, 2014, docket tracking number 1jy-8f2h-qnu0.

However, once hazards exist, even the best safety practices and the most vigorous enforcement of regulatory controls could not be expected to prevent all serious incidents. Where chemical processes are complex and tightly coupled, "normal accidents" are inevitable.[7] The interactive complexity of multiple small failures foils even the most effective safety control and management strategies. Adding safety features to existing hazards may reduce the frequency of serious accidents but does not address the inevitability of the underlying hazard.

The consequences of these inevitable failures can be very high. Marsh and McLennan, a major management consulting, insurance and risk management firm, annually summarizes the 100 largest property losses in the hydrocarbon industry - all losses exceed $100 million, and some exceed $1 billion.[8] The loss amounts include property damage, debris removal, and cleanup costs. However, these reported impacts underestimate the larger societal costs, since they do not include the costs of public emergency response, employee or public injuries/fatalities/chronic health problems, offsite damage to other public and private infrastructure, environmental damage, public and private business interruption (on-site and off-site), public and private compliance audits, and costs for addressing and resolving liability claims.

We urge EPA to consider how monumental catastrophic events in the past, while strengthening some aspects of the system of chemical safety, left enormous gaps in prevention that later proved tragic to too many workers and nearby communities.

In Texas City, Texas on April 16, 1947 poorly informed and trained emergency responders failed to quench a smoldering fire the SS Grandcamp cargo hold containing tons of ammonium nitrate (NH4NO3) fertilizer. The ensuing explosion killed nearly 600 people and destroyed vast industrial and public infrastructure, including a new petrochemical facility, and costing ~$1 billion in current dollars.[9] While this deadly chemical explosion spurred some minor improvements in safety practices, it marks a monumental failure of local, state and federal government to learn quickly from history and institute policies and oversight that could have prevented the similar NH4NO3 explosive tragedies and threats, including the one in West, Texas more than 60 years later. The historic inaction also elicits the need to question the public safety trustworthiness of those in the fertilizer industry who exerted their time and effort to block regulatory action to protect health and safety. Even to this day, the 1947 incident consequences elevate deficiencies of worst case scenarios that fail to include additional consequences attributable to knock-on effects, whereby explosions, fires and chemical releases from one process vessel precipitate subsequent consequences in other process and storage equipment at the same facility or in nearby public and private facilities.

[7] Charles Perrow, Normal Accidents: Living With High Risk Technologies, Princeton University Press, 1999.
[8] https://uk.marsh.com/Portals/18/Documents/100%20Largest%20Losses%2023rd%20Edition%202014.pdf
[9] Minugtaglio, Bill. *City on Fire: The Explosion that Devastated a Texas Town and Ignited a Historic Legal Battle*, University of Texas Press, Austin. 2003.

Union Carbide's methyl isocyanate toxic gas disaster, in Bhopal, India during December 2-3, 1984 caused what many claim as the world's worst chemical disaster: nearly 8,000 immediate deaths, 20,000 ultimate fatalities, 300,000 injured in a community lacking in public utilities and a public health infrastructure.[10] The poorly maintained facility, inadequately staffed with workers who were poorly trained in process safety and emergency response, proved deadly to a fenceline community lacking basic rights to know about the highly hazardous chemicals in their midst and appropriate training to respond to the gas release.[11] Decades after Bhopal's tragedy, deadly domestic industrial incidents reveal the ongoing, glaring vulnerabilities from reactive hazards, many yet to be subject even to current inadequate RMP and PSM regulations. A more recent domestic incident at the legacy West Virginia facility built by Union Carbide involved the same deadly chemical, methyl isocyanate, precipitating a recommendation from the Chemical Safety Board for the community to adopt inherently safer approaches to regulate their high hazard chemical industry.[12]

While Bhopal served as a stimulus to the Emergency Planning and Community Right-To-Know Act (EPCRA) and the development of private sector guidance on process safety and risk management, larger regulatory reach was not had until America was rocked by the Phillips petroleum hydrocarbon vapor cloud explosion, in Pasadena, Texas on October 23, 1989 when 23 were killed and monumental damages tallied at ~$1.4 billion. The incident, combined with many others in that time period (many also in Texas), served as a stimulus to the 1990 Clean Air Act amendments that mandated EPA's RMP regulatory program which still awaits provisions to prevent avoidable chemical hazards.

The West, Texas ammonium nitrate explosion (4/17/2013) points to the enormous and inequitable consequences of a chemical disaster to human lives, community resources, and a municipality's infrastructure. Property damage to schools alone was projected at $100 million and does not include the property damage to nearly 200 homes severely damaged or destroyed, a sizable fraction of the residential homes in West.[13] Some reports suggest total damages to the town may exceed $230 million, an unimaginable blow to a town of just 2,800 residents - more than $80,000 for each man, woman, and child living in West. Federal disaster assistance awarded to West has topped $16 million. This includes more than $9 million in federal disaster loans from the U.S. Small Business Administration (SBA); nearly $840,000 in Individual Assistance grants from the Federal Emergency Management Agency (FEMA); and more than $6.2 million in FEMA Public Assistance funding.[14] In testimony before the U.S. Senate Committee on Environment and Public Works on June 27, 2013, the U.S. Chemical Safety and Hazard Investigation Board stated that: "safety of ammonium nitrate fertilizer storage falls under a patchwork of U.S. regulatory standards and guidance that has many large holes."

[10] Lapierre, Dominique. *Five Past Midnight in Bhopal: The Epic Story of the World's Deadliest Industrial Disaster* Warner Books, New York 2002
[11] Shrivastava, Paul. *Bhopal: Anatomy of a Crisis* Balinger Publishing Company, Cambridge, MA 1987.
[12] http://www.csb.gov/bayer-cropscience-pesticide-waste-tank-explosion/
[13] http://www.csb.gov/assets/1/19/CSB_Written_Senate_Testimony_6.27.13.pdf
[14] FEMA, Federal Disaster Assistance Tops $16 Million in West, Texas, October 07, 2013, available at: https://www.fema.gov/news-release/2013/10/07/federal-disaster-assistance-tops-16-million-west-texas

Ammonium nitrate is one of the many explosive substances that are currently not regulated under EPA's RMP program. The CSB's ongoing investigation of the disaster in West provides a bigger picture of the shortcomings of current safety regulations under both EPA and OSHA. There is a need to modernize regulations to address the best safety regime that leads with prevention and requires companies to adopt safer chemical processes and new technologies to eliminate catastrophic risks.

Inaction towards improving the scope and effectiveness of incident prevention regulations continues to endanger workers and communities as documented by the Executive Order Interagency Working Group report released earlier this year. The small and incomplete list of tragedies documented by the Working Group since 2009 underscore the failures of our existing policies to prevent incidents and avoid preventable hazards by using safer alternatives.[15]

Since the institution of the RMP program, America also has awakened to the ever-growing reality of incidents perpetrated by terrorists as opposed to those caused by management incompetence, or malfeasance motivated by private economic gain. In a more generic risk assessment modeling effort, Risk Management Solutions, Inc. provides access to a detailed report which estimated that a "chlorine spill scenario results in 42,600 total casualties, over 10,000 of which are fatal. Insurance claims covering these casualties would exceed $7 billion."[16]

We urge EPA and the Working Group to recognize explicitly that breaches of chlorine containment are an established form of modern chemical terrorism and to articulate the public need for hazard reduction through inherently safer approaches that would justify revisions to the RMP program. EPA should request an expert opinion of the Department of Homeland Security as to the potentiality for chlorine and other concentrated toxic gases releases to be employed in domestic terrorism in light of ongoing actions in other parts of the world.[17]

IST/ISD Benefits Have Been Demonstrated

All incidents are preventable and cost savings for IST/ISD projects have been

[15] Executive Order (EO) 13650 - Actions to Improve Chemical Facility Safety and Security Working Group Report to the President, May, 2014 Appendix D
https://www.osha.gov/chemicalexecutiveorder/final_chemical_eo_status_report.pdf

[16] "Catastrophe, Injury, and Insurance: The Impact of Catastrophes on Workers Compensation, Life, and Health Insurance" (2004)
http://partners.holborn.com/holborn/reports/catInjury2004/RMS%202002%20study%20on%20Life%20-%20WC%20Cat%20Exposure%20%E2%80%93%20Holborn%20Co-sponsor.pdf

[17] See, for example: http://www.washingtonpost.com/world/middle_east/islamic-state-militants-allegedly-used-chlorine-gas-against-iraqi-security-forces/2014/10/23/c865c943-1c93-4ac0-a7ed-033218f15cbb_story.html; http://en.wikipedia.org/wiki/Chlorine_bombings_in_Iraq; http://usatoday30.usatoday.com/news/washington/2007-04-23-chlorine-truck-bomb_n.htm; http://www.americanprogress.org/issues/security/report/2007/04/02/2901/toxic-trains-and-the-terrorist-threat/; http://www.nti.org/gsn/article/syrian-militants-have-access-chlorine-gas-plant-owner/; http://www.johnstonsarchive.net/terrorism/wmdterrorism-1.html; http://www.nytimes.com/2007/02/22/world/middleeast/22iraq.html?pagewanted=all

demonstrated. Case studies of facilities or industries, or specific chemicals or processes, demonstrate significant cost savings by switching to "inherently safer technologies" (IST) at a surprisingly low cost. While recognizing very limited progress since the 1996 publication of Inherently Safer Chemical Processes by the American Institute of Chemical Engineers, Trevor Kletz highlighted the economic benefits:[18]

> If we can avoid hazards instead of keeping them under control, the resulting designs will usually be cheaper as well as safer, for two reasons: less added-on protective equipment will be needed and, if we can intensify, the plants will be smaller and therefore cheaper to operate.

The importance of inherently safer approaches are echoed by National Academy studies (Inherently Safer - The Future of Risk Reduction,[19] and Terrorism and Chemical Infrastructure[20]), and are promoted by a Chemical Safety and Hazard Investigation Board instructional video.[21]

More recently, the U.S. Chemical Safety and Hazard Investigation Board responding to the fatal April 2, 2010 Tesoro refinery disaster in Anacortes, WA that killed seven workers and other related incidents, issued a major recommendation to the U.S. EPA:[22]

> Revise the Chemical Accident Prevention Provisions under 40 CFR Part 68 to require the documented use of inherently safer systems analysis and the hierarchy of controls to the greatest extent feasible when facilities are establishing safeguards for identified process hazards. The goal shall be to reduce the risk of major accidents to the greatest extent practicable, to be interpreted as equivalent to as low as reasonably practicable (ALARP). Include requirements for inherently safer systems analysis to be automatically triggered for all management of change, incident investigation, and process hazard analysis reviews and recommendations, prior to the construction of a new process, process unit rebuilds, significant process repairs, and in the development of corrective actions.

We urge EPA to recognize the importance of requiring each regulated facility to demonstrate awareness and document cost savings and avoided liabilities available to the company and the surrounding community by permanently avoiding the potential for future catastrophic incidents. Over a facility's operating lifetime, on and offsite consequences change dramatically in terms of the number of lives at risk, the value of evolving on site and offsite infrastructures and the escalating costs for interruptions of increasingly interrelated business and community operations. In addition, we urge EPA to acknowledge the need for better information and better econometric systems to calculate positive economic impacts from implementing newer technologies and

[18] Inherently Safer Chemical Processes, a life cycle approach. Center for Chemical Process Safety. John Wiley and Sons, Inc., 2nd Edition, 2009
[19] http://dels.nas.edu/Report/Storage-Methyl/13385
[20] http://dels.nas.edu/Report/Terrorism-Chemical-Infrastructure-Protecting/11597
[21] http://www.csb.gov/videos/inherently-safer-the-future-of-risk-reduction/
[22] http://www.csb.gov/assets/1/7/Tesoro_Anacortes_2014-May-01.pdf

designs.

The Department of Homeland Security estimates $1.5 billion annual compliance costs associated with securing chemicals, costs that can often be avoided by switching to technologies that do not pose large inherent hazards such as those regulated by the RMP program.[23]

Converting to less hazardous operations may provide the most economical solution to chemical safety. One survey report of facilities that had converted from extremely hazardous substances, and had thereby deregistered from the RMP program, found that 76 of 226 facilities (34 percent) expected cost savings or improved profitability, and approximately half did not anticipate any significant increase in costs. In addition, 87 percent of the facilities in the survey reported conversion costs of less than one million dollars.[24] Another survey found that twenty large water or wastewater utilities that formerly used railcar amounts of chlorine gas had converted operations to safer disinfectants (typically sodium hypochlorite or ultraviolet light as appropriate) for less than $1.50 per year per person served—and typically much less.[25]

Identifying potential liabilities, costs, avoided costs and savings should be an integral part of the RMP program. Each facility should document its own potential liabilities, costs, avoided costs and savings and report these elements to EPA. There are many areas of potential savings and avoided costs of converting from extremely hazardous substances. In the survey noted above, Preventing Toxic Terrorism, companies identified a variety of costs and regulatory burdens that facilities fully or partly eliminated as a result of switching to less hazardous substances or processes.

Costs avoided with safer alternatives included:

- Theft and theft prevention
- Personal protective equipment (such as gas masks)
- Safety devices (such as leak detection or scrubbers)
- Safety inspections
- Higher risk group insurance premiums
- Potential liability
- Regulatory certifications, permits, and fees
- Compliance staff
- Certain chemical purchases
- Specialized emergency response teams
- Hazardous materials safety training
- Lost work time from chemical exposures
- Chemical damage to infrastructure

[23] Department of Homeland Security, "Regulatory Assessment: Chemical Facility Anti-Terrorism Standards Interim Final Rule" DHS-2006-0073, Table 3 (2007).
[24] http://www.americanprogress.org/issues/security/news/2006/04/24/1924/preventing-toxic-terrorism/
[25] http://www.americanprogress.org/issues/security/report/2007/04/02/2901/toxic-trains-and-the-terrorist-threat/

- Certain fire code requirements
- Certain physical security measures
- Unreliable chemical supply lines
- Placards and material safety data sheets
- Community notification
- Evacuation and contingency plans
- Background checks
- Compliance with OSHA Process Safety Management
- Compliance with EPA Risk Management Planning

Making the reporting of such avoided costs and liabilities an integral part of the RMP program will establish a valuable base of information for understanding the implications of converting to safer technologies. The RMP program should generate information on costs and solutions systematically. (Please see more specifics about needed data elements in our comments on the Safer Technology and Alternatives Analysis section.)

The costs of converting to safer operations pale in comparison to the billions of dollars incurred in disaster response, relocating communities, defending against personal injury law suits or resolving environmental cleanup liability or long term conventional security costs which add nothing to the business bottom line. While the CAP analysis demonstrates the availability and feasibility of safer alternatives, unfortunately most of the examples of conversions are not at the highest risk facilities, and at the current voluntary pace will take decades. Also, many assume that no new high-risk facilities go on line, yet emergence of new high hazard facilities may in fact already be happening.[26]

Another survey by the Center for American Progress in 2010 named 554 drinking water and wastewater plants in 47 states that have replaced extremely hazardous substances with safer and more secure chemicals or processes. In combination with new requirements to evaluate, document, and switch to safer and more secure chemical processes, we recommend that the EPA and other government Agencies should utilize the RMP National Database to facilitate the exchange of information on facilities that have adopted safer processes in order to encourage and assist additional facilities in adopting safer processes appropriate for their facility.[27]

A 2010 independent analysis of the 2009 bill (H.R. 2868) that passed the House of Representatives found that the conversions resulting from requirements to utilize IST or safer "methods to reduce consequences" (MRC) would have created 8,000 new jobs, especially within the chemical industry and water treatment sectors.[28]

By the middle of 2012, the Clorox Company converted all of its U.S. facilities to “strengthen our operations and add another layer of security,” according to their CEO. Clorox also indicated that these changes “won’t affect the size of the company’s work-

[26] http://www.americanprogress.org/issues/security/news/2006/04/24/1924/preventing-toxic-terrorism/
[27] http://www.americanprogress.org/press/release/2010/03/02/15246/new-survey-shows-improved-chemical-security-makes-millions-safer/
[28] http://www.misi-net.com/publications/HR2868-0710.pdf

force." This conversion eliminated Clorox's bulk use of chlorine gas and catastrophic risks to more than 13 million people in nearby communities.[29]

Apropos of protecting the President, Congress and EPA's headquarters from catastrophic chemical risks, the Blue Plains sewage treatment plant in Washington, DC halted its use of gaseous chlorine and switched to a safer chemical process ninety days after the 9/11 attacks due to fears of another attack. The plant rapidly switched from using 90-ton railcars of chlorine gas and anhydrous sulfur dioxide, effectively removing the threat of harmful exposure for 1.7 million people living near the plant.[30] To get a sense of the exposure they represented, consider that in January 2005, when a freight train pulling three tankers full of liquefied chlorine and one tanker of sodium hydroxide slammed into a parked train in Graniteville, South Carolina, it released 11,500 gallons of chlorine gas, killing 9 and injuring at least 529 people in an incident without malicious intent and occurring in a relatively rural location.[31]

III. Substantive and Transparent Assessment of Alternatives Must be Required

The foundation of any policies and programs to prevent chemical disasters require systematic assessment of alternatives to extremely hazardous chemicals and processes, for three critical reasons:

1. Unless companies seriously research whether safer alternatives could be used instead of continuing the use of extremely hazardous chemicals (and most companies will NOT undertake such research unless mandated to do so), they will not know about safer alternatives that may be available, effective, and affordable.

2. Unless companies assess whether possible alternatives to extremely hazardous chemicals are truly safer, any alternatives identified are likely to simply be similar chemicals with the same hazardous properties (reactivity, for example), and these similar chemicals are likely to be similarily hazardous.

3. Rapid changes in information technology are driving changes in the manufacture and use of hazardous substances (just as with other areas of the economy). Federal chemical safety regulations must keep pace with and take advantage of these changes by not simply attempting to control hazards but also by systematically generating and communicating safer solutions.

Extensive experience under many state programs, especially the Massachusetts Toxics Use Reduction program, and also some federal programs, show conclusively that systematic identification and assessment of possible safer alternatives leads to safer chemicals and processes, cost savings, and improved health and environmental quality. National and state experience also shows that most companies and facilities will not

[29] http://investors.thecloroxcompany.com/releasedetail.cfm?ReleaseID=420583
[30] http://homeland.house.gov/sites/homeland.house.gov/files/Testimony%20Hawkins_1.pdf
[31] https://www.ntsb.gov/investigations/summary/RAR0504.html

systematically examine possible alternatives unless required to do so, and will not convert to available safer alternatives unless required to do so.

The past ten years have seen a huge growth in Alternatives Assessment methods and frameworks, including the *Commons Principles for Alternatives Assessment* (developed in part by the Massachusetts Toxics Use Reduction Institute), the Interstate Chemicals Clearinghouse (IC2) *Alternatives Assessment Guide*, the GreenScreen hazard analysis process, and the Quick Chemical Assessment Tool (QCAT) developed by the Washington Department of Ecology, alternatives assessment methods used by EPA's Design for the Environment program, and most recently one published two weeks ago by the National Academy of Sciences.

The methods, frameworks, infrastructure, and personnel to identify safer alternatives to extremely hazardous chemicals used or stored at RMP facilities clearly exist and are already in use by some states, companies, and federal programs. What is missing from EPA's RMP program is a first step **requirement** that facilities evaluate alternatives, with organized public disclosure of the results.

The Massachusetts TUR program, which requires facilities to examine possible alternatives and create toxics reductions plans, with management and certified third-party planners required to sign off on plans, has resulted in the elimination of hundreds of millions of pounds of toxics since 1989, including a 95% reduction in TCE use. Massachusetts has achieved significantly greater reduction of toxic chemicals than other states precisely because it forces companies to research and consider alternatives to extremely hazardous chemicals.

Experience in many states and industries, and in both production processes and consumer product formulations, demonstrates that alternatives assessment is achievable, affordable (i.e. not unduly expensive) and cost-effective (because of the significant direct cost savings and other economic savings often generated, as well as the benefits to health, environmental quality, and public safety that are achieved).

Systematic assessment of possible alternatives also avoids regrettable substitution, in which a similarly toxic, explosive, flammable, or otherwise hazardous chemical is used as a replacement, which achieves little or no safety benefit. For example, when OSHA implemented its methylene chloride standard, one substitute chosen by some companies was n-propyl bromide, a neurotoxicant, reproductive toxicant, and carcinogen. This occurred precisely because companies were not required to assess alternatives and identify truly safer ones.[32]

The current RMP program's primary focus on simply planning to manage disasters has failed to seize easily available opportunities to reduce or remove extremely hazardous

[32] Lowell Center for Sustainable Production, *Lessons Learned: Solutions for Workplace Safety and Health Case Study 5: Regulating methylene chloride: a cautionary tale about setting health standards one chemical at a time*, by Molly M. Jacobs, Joel Tickner, and David Kriebel, at http://www.sustainableproduction.org/case-study-5.php

chemicals, and, as the West, TX explosion demonstrates, has even failed to ensure strong disaster preparedness and response. EPA and the RMP program must build on the success of state and federal programs that focus on removing hazards and preventing disasters by mobilizing the significant expertise available within companies, academia, safety consultants, and the nonprofit sector to identify safer alternatives.

No company or facility should be allowed to use an extremely hazardous chemical (including all the chemicals covered by the RMP program) without being required to evaluate whether a safer alternative could be used instead.

Any company that has one or more alternatives available that are safer, effective, and affordable should be required to convert away from the extremely hazardous substance.

We provide responses to EPA's specific questions regarding assessment of alternatives below. In general, we believe that EPA should:

- Require assessments that meet certain criteria for quality and completeness;
- Require that senior management (and possibly certified third-party planners) sign off on assessments and plans;
- Require that assessments be submitted to EPA and publicly disclosed to workers, communities, industry, emergency responders, and governments;
- Require that facilities convert away from extremely hazardous substances when one or more alternatives are available that are safer, effective, and affordable;
- Require that when companies conclude that no safer alternative is available, they document their rationale and create a strategy to develop or identify a safer alternative in the future;
- Initiate Green Chemistry challenges or other research and development to stimulate the creation of safer alternatives when there is no clearly superior alternative to a hazardous chemical or process.

Specific Responses to RFI Questions in Section D1 Regarding Safer Technology and Alternatives Analysis

a. Should EPA require a safer alternatives options analysis either as a new prevention program element, as part of the existing PHA/Hazard Review element, or as a separate new requirement under CAA section 112(r)?

As noted above and throughout these comments, it is critical that EPA quickly adopt and implement requirements for safer alternatives options analysis by RMP facilities. Without such a requirement, very few facilities in most industry sectors will seek out or

identify safer alternatives that can reduce or remove extremely hazardous chemicals, despite the fact that safer alternatives already exist for many chemicals and processes.

In particular, the experience in Massachusetts – where the state has documented much greater reductions in toxic chemicals precisely because companies are forced to research alternatives – demonstrates that without an assessment requirement few companies will take the initiative to seek out alternatives.

Massachusetts has found that requiring companies to conduct planning to identify and assess safer options every two years produces measurable results in terms of toxics use reduction (TUR), improved worker health and safety, improved environmental performance and cost savings. Requiring companies to take the time to make these plans has led them to identify opportunities for improvement that they might not otherwise have identified.

EPA should first take steps that do not require rulemaking; second, amend existing programs; and third, establish new regulations. These steps should not be mutually exclusive and each should be implemented as quickly as possible. EPA has clear authority to add prevention elements to the RMP program, as demonstrated by the Agency's request for comment on the issue nearly 20 years ago and extensive analysis and documentation, and should promptly exercise this authority.

b. How should safer alternatives be defined if it were to be a requirement under CAA section 112(r) regulations? What specifically should a safer alternatives analysis require and how would this differ from what is already required under other provisions of the RMP?

Because of the extensive prior work already completed by state Agencies, NGOs, and leading companies regarding principles and procedures for alternatives assessment, there are ample resources from which EPA can draw in creating RMP requirements and definitions, as well as resources for regulated businesses.

For example, a recent publication to which staff at the Massachusetts Toxics Use Reduction Institute contributed defines a safer alternative as: "An option, including the option of not continuing an activity, that is healthier for humans and the environment than the existing means of meeting that need. For example, safer alternatives to a particular chemical may include a chemical substitute or a re-design that eliminates the need for any chemical addition."[33] The Massachusetts TUR program provides specific techniques that are considered appropriate pathways to toxics reduction, including input substitution, product reformulation, production unit redesign or modernization, and others.

[33] From Tickner, J. and Eliason, P. Alternatives Assessment for Chemicals: From Problem-Evaluation to Solutions-Assessment and Implementation: A background paper created for the March 31–April 1, 2011 Interagency Discussion on Alternatives Assessment, EPA Potomac Yards Conference Facility, Crystal City, VA. March 24, 2011.

The Commons Principles for Alternatives Assessment defines alternatives assessment as: "a process for identifying, comparing and selecting safer alternatives to chemicals of concern (including those in materials, processes or technologies) on the basis of their hazards, performance, and economic viability."[34]

OSHA, in *Transitioning to Safer Chemicals: A Toolkit for Employers and Workers*[35] defines a safer alternative in the occupational health context as "an option that is less hazardous for workers than the existing means of meeting that need. Sometimes, this means choosing the option of not continuing an activity altogether; this also may include using chemical substitutes or product or process redesigns that completely eliminate the need for specific hazardous chemicals."

Safer alternatives include methods that reduce or eliminate the potential for death, injury, or serious adverse effects to human health or the environment of a worst-case release of a substance (in contrast to simply managing the effects of such a release). Commonly recognized methods that achieve this objective in the emergency planning and prevention context include: alternate substances, formulations, and processes; modification of pressures, temperatures, or concentrations; and the reduction or elimination of handling of a substance through improvements in inventory control or efficiency. The focus of any definition of safer alternative must be to reduce or eliminate the underlying hazard.

Experience suggests the need to carefully distinguish prevention approaches that reduce or remove intrinsic hazards from management approaches that do not. Management approaches may be important when no feasible option can prevent a hazard. However, management approaches invariably add costs, are inevitably subject to failures or circumvention, and lack the advantages of upgrading production processes. A definitional backstop is needed along the following lines: prevention methods that reduce the consequences of a chemical release should not include measures that (a) are intended to contain, control, mitigate, or recover the release of a substance of concern; and (b) could be breached, disabled, deficient, or bypassed in the event of a release of a substance of concern (including an intentional criminal release).

Likewise, the past ten years have seen rapid development of methods and frameworks to assess hazards and alternatives in a systematic, transparent manner. Several of these existing methods or frameworks are described in our response to question "e" below. We will note here that it is important to consider **functional substitution** by looking at the chemical function in a product or process, and considering all options to achieve that function other than just using the chemical or replacing it with a similar chemical (which is likely to be similarly hazardous).

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[34] Lowell Center for Sustainable Production et al. The Commons Principles for Alternatives Assessment (includes consensus definition of alternatives assessment). 2013 October. http://www.turi.org/Our_Work/Research/Alternatives_Assessment/Commons_Principles_for_Alternatives_Assessment

[35] Available at https://www.osha.gov/dsg/safer_chemicals/basics.html

c. How should industries determine if a safer alternative exists for their particular process? What safer alternative chemicals are available for the listed RMP chemicals and for ammonium nitrate?

Industries should conduct an analysis of safer alternatives as a routine component of their Risk Management Plans. This analysis should include the elements delineated elsewhere in these comments. EPA should view the RMP program as a source of information on solutions that are developed through the responsibilities of covered facilities to demonstrate knowledge of their processes and common alternatives. EPA should not await or rely on any external expert compilation of alternatives; rather, alternatives assessments under the RMP program should generate the solutions by mobilizing the expertise of companies, workers, communities, alternatives experts, governments, and NGOs.

Industries can determine if a safer alternative exists for their particular process by examining a number of questions, including:

- Do other businesses or actors in the same industry sector already use a safer alternative? This should include an examination of businesses and other relevant actors both within and outside the U.S.
- Is there existing academic research that demonstrates or investigates the viability of safer alternatives?
- Is the process or functional use of a chemical similar to another process for which safer alternatives have been identified?

A variety of detailed resources have been developed to help industries answer these questions, including those developed by the Interstate Chemicals Clearinghouse (IC2)[36]; the Substitutions Portal (Subsport)[37]; the Pharos Database[38]; and the ASETSDefense database[39], among others. Businesses, NGOs, and government Agencies are continually expanding and improving these resources.

In particular, the IC2 Alternatives Assessments Guide (cited elsewhere) includes an entire Identification of Alternatives Module to help assessors identify the universe of possible alternatives to be considered. The process includes identifying functionally equivalent alternatives and alternatives available in the marketplace.

Several surveys have compiled examples of alternatives that are already in use across some twenty industries.

[36] http://www.theic2.org/
[37] http://www.subsport.eu/
[38] https://www.pharosproject.net/
[39] http://www.asetsdefense.org

- **Preventing Toxic Terrorism: How Some Chemical Facilities Are Removing Danger to American Communities** identified 284 facilities that switched to safer and more secure technologies – while frequently saving money. (Center for American Progress, 2006)

- **Toxic Trains and the Terrorist Threat: How Water Utilities Can Get Chlorine Gas Off the Rails and Out of American Communities** identified two-dozen large water utilities that eliminated chlorine gas railcars for less than the cost of a bag of potato chips per customer per year. (Center for American Progress, 2007)

- **Chemical Security 101: What You Don't Have Can't Leak, Or Be Blown Up by Terrorists** identified options to eliminate a catastrophic chemical release danger from most of the nation's 101 highest hazard chemical sites. (Center for American Progress, 2008)

- **Safer Chemicals Create a More Secure America** identified 554 drinking water and wastewater facilities across 47 states that have replaced extremely hazardous substances with alternate substances or processes. (Center for American Progress, 2010)

Generally, alternatives identified in these surveys include:

- Bleach manufacturers eliminate bulk chlorine gas by generating chlorine as needed "just in time" on-site, eliminating transportation and storage vulnerabilities.

- Petroleum refineries avoid dangerous hydrofluoric acid alkylation by using less hazardous sulfuric acid; others are developing solid acid catalysts.

- Water utilities eliminate bulk chlorine gas by using liquid bleach, ozone without storage, and ultraviolet light as appropriate.

- Paper mills eliminate bulk chlorine gas by using hydrogen peroxide, ozone, or chlorine dioxide without bulk storage.

- Pool service companies eliminate chlorine gas by using chlorine tabs or liquid bleach.

- Manufacturers of polyurethane foams eliminate bulk ethylene oxide by substituting vegetable-based polyols.

- Soap and detergent manufacturers eliminate bulk oleum and sulfur trioxide by using sulfur burning equipment on-site.

- Manufacturers of ferric chloride eliminate bulk chlorine gas by processing scrap steel with less concentrated liquid hydrochloric acid (less than 37 percent) and

oxygen.

- Titanium dioxide producers eliminate bulk chlorine gas by generating chlorine on-site as needed without storage, or by using the sulfate process.

- Secondary aluminum smelters eliminate bulk chlorine gas by removing impurities with nitrogen gas injected with magnesium salts.

- Manufacturers of semiconductors, silicon wafers, and metal products eliminate concentrated hydrofluoric acid by using less concentrated forms (less than 50 percent).

- Power plants eliminate bulk anhydrous ammonia gas by using cleaner combustion or by using aqueous ammonia or urea in pollution control equipment; they also remove chlorine gas by using liquid bleach to treat cooling water.

- Wholesale chemical distributors eliminate most bulk chlorine gas and sulfur dioxide gas by distributing alternatives such as liquid bleach and sodium bisulfite.

- Pulp mills, food processors, wastewater plants, and hazardous waste recovery operations eliminate bulk sulfur dioxide gas by, as appropriate, generating sulfur compounds on-site or purchasing sodium bisulfite, metabisulfite, hydrosulfite, or other alternatives.

- Diverse manufacturers eliminate bulk chlorine gas by generating chlorine on-site as needed without storage, such as for fuel additives, water treatment chemicals, and aramid polymers used to make bulletproof vests.

In short, there are extensive models and resources available to help companies determine if a safer alternative may exist for their particular process, and many safer alternatives to RMP chemicals have been identified and adopted by some facilities. However, most facilities will not undertake this research or convert to a safer alternative when feasible without mandates to do so.

d. What should facilities consider when determining if such technologies, when identified, are effective, available, and economically justified for their particular process or facility? Can the RMP national database, Lessons Learned Information System or other federal databases be structured to promote the exchange of information both within industry and with other stakeholders on potentially safer technologies?

We provide extensive suggestions and guidance in other sections of these comments regarding how facilities should determine if alternative methods are effective, available, and affordable (i.e. through a well-defined and systematic alternatives assessment that is publicly disclosed), and many examples and resources cited in these comments provide helpful models.

For example, under the Massachusetts Toxics Use Reduction program, in analyzing the economic aspects of the incumbent technology and safer alternatives, companies are directed to consider elements including indirect and direct labor and materials costs; purchase or manufacturing cost of the toxic chemical and alternatives; capital and equipment costs; storage, accumulation, treatment, disposal, and handling costs associated with toxics and byproducts; costs associated with activities required to comply with local, state, or federal laws or regulations; worker health or safety costs, including protective equipment and effects of possible accidents; insurance; liability; community good will; and product sales lost to competing non-toxic products.

The IC2 Alternatives Assessment Guide includes a Performance Evaluation Module, and Costs and Availability Module, that help assessors determine whether alternatives considered are technically feasible and evaluate whether alternatives are price competitive and available.

The RMP National Database can be structured to provide essential information about successful implementation of safer technologies. EPA should view the RMP National Database not only as a means of documenting measures taken to control chemical hazards under the RMP program but also as a source of information on safer solutions that companies are adopting. Using the RMP National Database as a source of information on solutions should be integral to the program.

EPA should collect in Risk Management Plans basic information to indicate how covered facilities are able to use safer technologies to deregister from the RMP program. This basic information should indicate the nature of changes facilities have made to safer technologies, such as:

- using an alternate chemical or process;
- using the chemical in a less hazardous form or condition (such as less concentrated, aqueous instead of gaseous, or lower temperature, as appropriate);
- reformulating a product or redesigning or modernizing a process to reduce or avoid the need for the chemical;
- generating the chemical as needed on-site without storage;
- co-locating chemical suppliers with users in ways that remove bulk accumulation of the substance;
- avoiding the need for bulk chemical storage.

Adding these simple elements to the RMP database, to indicate the means that facilities have used to deregister from the program, will help inform industry, government, and the public about safer technologies. Over time these data elements will provide an ever-enlarging pool of information about options that have enabled facilities to deregister from the RMP program. Of course not all deregistered RMP facilities will have switched to safer operations; some will have moved locations, ceased operations, or otherwise exited the RMP program for other reasons.

EPA took public comments on changes to the RMP data requirements in 2003 (68 FR 45123). Several organizations recommended at the time that EPA add the elements listed above to the RMP program but the Agency did not do so.[40] EPA should view the RMP program as a source of information about changes in technologies that are occurring in industry with profound impacts on reducing hazards to communities.

Such reporting will provide a rich and evolving source of information about safer technologies that are known to be available, effective, and affordable because they are already in use within the actual circumstances of particular facilities. EPA can easily add the reasons for de-registrations as categories and text-boxes to menus in the RMP reporting software. Companies should have sufficient understanding, as a result of the RMP process, to readily provide such information.

e. If EPA were to require facilities to undertake an evaluation of the potential to incorporate safer alternatives, what minimum criteria should this evaluation be required to meet? How would the evaluation determine if a particular alternative is feasible, cost effective and results in less risk? What requirements or incentives, if any, should there be for implementation of identified safer alternatives? How should any such requirements be structured and enforced?

Any assessment of possible safer alternatives must be based on appropriate definitions, criteria, and guidance to ensure systematic and good faith assessment.

Any analysis should include: the degree to which each method could reduce the potential consequences for death, injury, and serious adverse effects to human health, infrastructure, and the environment; the technical feasibility, costs (including capital and operational costs), avoided costs (including savings and potential liabilities), personnel implications, and applicability of implementing each available method; and any other information that the owner or operator of the covered chemical facility considered in conducting the assessment. The assessment should describe each major hazard reduction method selected or rejected, including the reasons for rejecting a major hazard reduction approach (no safer technology, too costly, or increased hazard).

Many successful programs and models exist that establish minimum criteria for alternatives assessments and provide definitions or guidance to determine safety, feasibility, and effectiveness. Some examples appear below.

The Massachusetts TUR program requires reduction plans to include specific components, including:

- Statement of management policy related to toxics use reduction;
- Statement of the scope of the plan;
- Process flow diagram for each production unit, including information on amounts of toxic chemicals used in each production unit;

[40] Working Group on Community Right-to-Know, Environmental Defense, National Environmental Trust, and Natural Resources Defense Council, Docket No. OAR-2003-0044, September 15, 2003.

- Cost of the use of each toxic chemical;
- Procedures used to identify TUR options;
- Description of TUR options;
- Technical evaluation of TUR options;
- Economic evaluation of TUR options.

Under Maine's Toxic Chemicals in Children's Products Law, the state can require companies to assess alternatives to priority chemicals in consumer products that may expose and harm children. The governing regulations delineate specific criteria that define what is considered an acceptable alternatives assessment (and give the state Agency the authority to commission an independent assessment at the company's expense if an acceptable assessment is not provided).

From Maine Department of Environmental Protection Regulations Chapter 880[41]:

> If information provided to or obtained by the department indicates that children or other vulnerable populations are exposed to a priority chemical in a product as a result of its distribution, an assessment of the availability, cost, feasibility and performance, including potential for harm to human health and the environment, of alternatives to the priority chemical and the reason the priority chemical is used in the manufacture of the children's product in lieu of identified alternatives. If an assessment acceptable to the department is not timely submitted, the department may assess fees as provided under 06-096 CMR 881 to cover the cost of preparing an independent assessment. An acceptable assessment is one that:
>
> (a) Describes the function of the priority chemical in the product and list the specific characteristics of the chemical (e.g., physical or chemical properties, price, availability) that led to its selection to fulfill that function;
>
> (b) Identifies the specific chemical and non-chemical alternatives considered in lieu of the priority chemical, and describes why the priority chemical was selected over each identified alternative;
>
> (c) Identifies and describes any known emerging chemical and non-chemical alternatives to use of the priority chemical in the product and, for each such alternative, provides the following information:
>
> (i) The status of research and development;
>
> (ii) The current barriers to introduction of the alternative into the marketplace;
>
> (iii) The projected timeframe for introduction of the alternative into the marketplace; and

[41] Available at http://www.maine.gov/sos/cec/rules/06/096/096c880.doc

> (iv) The advantages and disadvantages of using the alternative in lieu of the priority chemical, assuming the alternative is successfully introduced into the marketplace;
>
> (d) Identifies the key, distinguishing human health and environmental hazards (or "endpoints") associated with the priority chemical;
>
> (e) Evaluates the human health and environmental hazard posed by the priority chemical and each identified chemical alternative using the GreenScreen™ or other evaluation methodology approved by the department; and
>
> (f) Provides copies of all peer-reviewed studies or government-generated studies identified through a search of publicly accessible databases and lists the search terms used. The search must be conducted for the priority chemical and for each chemical alternative identified pursuant to subparagraph (b) and (c) and must, at a minimum, include as search terms the endpoints identified pursuant to subparagraph (d).

The Massachusetts Toxics Use Reduction Institute worked with partner Agencies across the country to develop the Interstate Chemicals Clearinghouse (IC2) *Alternatives Assessment Guide*.[42] The guide outlines a sequential process in which options are screened first based on hazard, then based on performance, and finally, to the extent that more than one option emerges, the remaining options are ranked in relation to one another based on cost, availability, and (if relevant) exposure considerations.

The guide also provides a detailed description of modules that can be used at each stage of analysis. For example, the Hazard Module includes an initial screen plus three levels of evaluation, with a higher level of detail and verification at each level. Resources that can be used within this module include EPA's Design for the Environment Program Hazard Traits; GreenScreen; and the Quick Chemical Assessment Tool (QCAT), developed by the Washington Department of Ecology.

The Commons Principles for Alternatives Assessment may also be a valuable resource.[43] It sets out six key principles:

- Reduce hazard;
- Minimize exposure;
- Use best available information;
- Require disclosure and transparency;
- Resolve trade-offs; and
- Take action to eliminate or substitute potentially hazardous chemicals.

[42] Available at http://theic2.org/article/download-pdf/file_name/IC2_AA_Guide_Version_1.0.pdf
[43] Lowell Center for Sustainable Production et al. The Commons Principles for Alternatives Assessment (includes consensus definition of alternatives assessment). 2013 October.

Elsewhere in these comments we address methods and standards to determine if alternatives are available, feasible, and safer. We would summarize here by saying that methods are clearly available when developed by the owner or operator, implemented by or commercially available from other companies, or reasonably available using sources such as best engineering judgment, trade journals, or expert consultants. Available methods are clearly feasible when the owner or operator has the capacity to implement them, and, unless documented circumstances differ, when they have already been implemented by similar facilities. Elements of feasibility include technical and economic. Technically feasible means the existence of technical know-how as to available practices that can be applied to remove the recognized hazard. Economically feasible means the owner or operator is financially able to undertake available practices necessary to prevent the recognized hazard.

Maine's regulations (noted above) also provide specific guidance about determination of the availability of alternatives to chemicals in consumer products that may be helpful to EPA in developing similar guidance for the RMP program.

Also from Maine Chapter 880:

> (1) Availability. For the purpose of determining whether an alternative is available at comparable cost, the board shall consider all relevant evidence to that effect including but not limited to:
>
> (a) The extent to which the alternative currently is available in the marketplace;
>
> (b) The affordability of the alternative as demonstrated by sales volumes;
>
> (c) The purchase price differential between the product containing the priority chemical and the alternative; and
>
> (d) In the case of an alternative that is not already offered for sale, information bearing on the ease with which the alternative could be substituted for the use of the priority chemical and introduced into the U.S. market.

Covered facilities should renew the evaluation of safer alternatives on the same schedule as the RMP (generally every five years or upon significant change to covered processes at the facility) or more frequently. The Massachusetts TUR program requires facilities to conduct toxics use reduction planning every two years.

Covered facilities should be required to demonstrate a "need to use" a specific extremely hazardous chemical or process, i.e., should document using qualitative and quantitative evaluation that no safer alternative chemical or process, or product or process redesign or reformulation that would eliminate the need for the hazardous chemical, is available and feasible. Evaluations and plans should also include a timeline for implementing alternatives that are available and feasible.

It is also critical that EPA require conversion to safer alternatives when one or more alternatives are safer, available, effective, and affordable. As noted above, few facilities will choose to research alternatives or convert even when alternatives are available, effective, affordable, and safer, without mandates to do so.

Evidence of the failure of voluntary measures and the market place are found in the November 16, 2012 Congressional Research Service (CRS) analysis of chemical facilities in the EPA's Risk Management Program (RMP).[44] Compared to a similar CRS analysis in 2009 the number of RMP facilities has grown by several hundred.[45]

While the New Jersey program requires facilities to assess safer chemical processes, it lacks transparency and lacks authority to require conversion to safer alternatives. These failures have led to a situation in which 93 New Jersey facilities still use large quantities of highly hazardous chemicals that pose a catastrophic health and safety risk, including five facilities that each put 2 million or more people at risk.[46]

The Contra Costa County, California Industrial Safety Ordinance also suffers from a failure to require conversion to safer alternatives, even when they are available and could prevent disasters. The California Interagency Working Group on Refinery Safety report from July 2013 found that "had an inherently safer system approach been in place at its Richmond refinery, Chevron would have been forced to demonstrate why continuing to use low-silicon metal susceptible to corrosion was the best solution, given other inherently safer options."[47]

See our additional analyses of the New Jersey and Contra Costa programs in Section VII.

No facility should be allowed to continue using an extremely hazardous substance that endangers its workers and neighbors – often tens of thousands of people and other businesses – when safer alternatives could reasonably be used instead. As noted above, several surveys have compiled examples of alternatives that are already in use across some twenty industries but have not yet been adopted by all relevant facilities.

f. Should EPA require facilities to use a safer alternatives evaluation method such as the CCPS Inherently Safer Technology Checklist?

Under the RMP program, EPA specifies basic elements that covered facilities must include, but allows facilities to select from credible methods to do so. In keeping with this approach, facilities should be allowed to use credible methods that address the elements to be specified in the alternatives assessment: the technical feasibility, costs (including capital and operational costs), avoided costs (including savings and potential

[44] See https://www.documentcloud.org/documents/557127-crs-rmp-update-11-16-12.html
[45] https://www.documentcloud.org/documents/557128-crs-update-2009.html
[46] http://www.njwec.org/PDF/Reports/FailuretoAct_CompleteReport.pdf
[47] http://www.calepa.ca.gov/Publications/Reports/2013/Refineries.pdf

liabilities), personnel implications, applicability of implementing each available method, and other required elements. The CCPS Inherently Safer Technology Checklist is useful but incomplete; it does not develop information on some of these elements, such as savings and potential liabilities. It also includes active control and mitigation strategies that may serve to contain rather than remove inherent hazards; such controls may be warranted but should be carefully distinguished from prevention strategies, and only adopted if prevention strategies are not available. For example, the Massachusetts TUR program is careful to make clear distinctions between options that are a true hazard reduction (reduction or elimination of the toxic chemical) and options that merely contain or control risk. And the CCPS checklist may be better suited for chemical processing facilities than for chemical-user industries (which make up a majority of the RMP universe) that have a more limited set of common alternatives.

g. How should EPA and facilities address the risk tradeoffs that could result when changing a process to incorporate safer alternatives?

Risk tradeoffs are a necessary part of planning. Facility owners and operators routinely make decisions and choices between technological alternatives. Risk tradeoffs do not exist under prevention programs alone. Risk tradeoffs should receive the same treatment under prevention elements as under other aspects of the program.

The six Commons Principles for Alternatives Assessment (mentioned above) includes "resolve trade-offs" as a core principle. Alternatives assessments and reduction or substitution plans should be required to identify, explain, and resolve tradeoffs.

Decisions about risk tradeoffs can be addressed through transparency at each stage of assessment and planning, especially if the process does not identify a clearly superior alternative. California's Safer Consumer Products Regulation requires companies to describe their rationale for any trade-offs that are made. When implementing substitutions, care must be taken to minimize negative aspects of key tradeoffs.

The evaluation and implementation of alternatives should follow a hierarchy of prevention remedies. The owner or operator should base design considerations upon available methods that avoid a recognized hazard prior to the use of engineering controls, administrative controls, or protective equipment to contain, control, or mitigate the hazard. Prevention methods eliminate or reduce an intrinsic hazard prior to control measures that could be breached, disabled, deficient, or bypassed in a chemical emergency.

In selecting from competing remedies to a recognized hazard, the owner or operator should address the applicability of remedies that most uniformly prevent risk tradeoffs, where available. For example, a large tank has a greater potential release, but multiple smaller tanks may require more handling of a chemical. In this case, the owner or operator must evaluate and document available methods that reduce or eliminate both the scope and frequency of the hazard (such as an alternate process that does not use a chemical in a hazardous form).

While risk tradeoffs are common and can be managed and assessed, it is important to avoid **risk shifting** among environmental media or among groups of people (i.e. not simply replacing an airborne hazard with an equally dangerous water hazard, and not protecting one group of people by simply shifting the same risk to a different group of people). Risk shifting is not acceptable and should be specifically excluded from definitions of safer alternatives (as is the case under the Massachusetts TUR program).

h. Should EPA consider requirements similar to those used by the State of New Jersey or Contra Costa County, California, and if so, why? What have been the benefits of such programs in risk reduction or process safety for the facilities covered under these requirements? What have been the limitations or drawbacks of these programs?

These programs have been beneficial, but sometimes include control methods that perpetuate rather than prevent hazards. While such control methods may be appropriate for unavoidably hazardous operations, they should not be considered a primary prevention strategy. For example, New Jersey includes as "inherently safer technology" warning labels, leak detectors, thermal imaging cameras, fogs/sprays/deluge systems, spill containment, toxic gas scrubbers, and other non-IST measures that control rather than remove or reduce intrinsic chemical hazards. EPA can avoid replicating this problem by setting a backstop that we have proposed elsewhere in these comments: prevention methods that reduce the consequences of a chemical release should not include measures that (a) are intended to contain, control, mitigate, or recover the release of a substance of concern; and (b) could be breached, disabled, deficient, or bypassed in the event of a release of a substance of concern (including an intentional criminal release).

For a fuller analysis of the programs, see Section VII of our comments on the New Jersey and Contra Costa County programs.

i. If EPA were to develop regulatory requirements for safer alternatives, which facilities should be subject to those requirements? Should all RMP facilities be subject to such requirements, or only "high risk" facilities, such as refineries and large chemical plants? How would "high risk" be defined? Are there particular processes or chemicals that should be targeted or prioritized for implementation of such requirements?

All RMP facilities should be subject to safer alternatives analysis requirements. EPA should not create yet another definition for a new subset of "high risk" facilities for the purpose of requiring documented alternatives analyses that are submitted to the Agency. All facilities with potential workplace or off-site impacts to a community should be required to evaluate alternatives that can remove the hazard (under OSHA PSM and/or EPA RMP as appropriate). At the same time, EPA should undertake guidance, compliance, and enforcement initiatives based on industry sector, type of hazard, scope of hazard (such as large populations in vulnerability zones), RMP program level, and recent accidents. However, facility alternatives analyses generated and submitted to the Agency by all RMP facilities should inform EPA activities, not the other way around.

j. What barriers exist for industry to adopt safer alternatives? What incentives can be used by government to have facilities implement safer alternatives? Should the Agency provide special recognition to companies that implement safer alternatives?

The primary barriers to safer alternatives are complacency, inertia, and lack of knowledge, which are perpetuated by fragmentation of government authorities and by the lack of structured federal requirements for review, documentation, communication, and selection of alternatives. As outlined elsewhere in these comments, the federal government should require chemical facilities to demonstrate awareness of commercially available alternatives used by or available from leaders in their industry in order to utilize the technology shifting effect of facilities acting to avoid the costs and liabilities of controlling, managing, and mitigating chemical hazards. EPA should also grow and maintain scientific and engineering competency to critique the alternative assessments, as well as promote technical assistance grants for workers and communities to become fuller participants in the process. The federal government should also require facilities that use or hold large amounts of extremely hazardous substances to carry liability insurance or post bonds commensurate with the potential damages that could result from a worst-case chemical release. The federal government should also amend railroad common carrier obligations to require shippers by rail of extremely hazardous substances to share in the potential liabilities that could result from a spill, particularly from events that are beyond the control of the railroad carrier.

EPA's ability to identify companies that implement safer alternatives will be greatly enhanced by providing not only general categories for companies to indicate how they have deregistered from the RMP program (as noted above), but also text-boxes to briefly explain how they have done so.

k. What are other options (other than regulatory requirements) exist to encourage facilities to investigate, develop or implement safer alternatives and how can EPA further these efforts?

Extensive experience at the state and federal levels indicates that unless required to do so, most facilities and companies will not systematically research possible alternatives.

l. If RMP facilities are required to perform safer alternative options analyses and implementation plans, should EPA require that the analyses and/or implementation plans be submitted to the Agency? Should EPA have any role in approving such analyses or plans? In lieu of an approval, can EPA promote safer alternatives through reporting and the dissemination of information on potentially applicable practices?

Covered facilities should be required to submit safer alternative options analyses and implementation plans to EPA. Failure to require such submission would invite companies to create deficient analyses and would impede the organized dissemination of information. EPA approval in completeness reviews, audits, inspections, and penalties will help ensure the integrity of analysis and plans. Safer alternatives reporting

and dissemination of information is vital, but must be integral to other aspects of regulatory programs.

m. If RMP facilities are required to consider safer alternative options, what role should local communities have in these analyses? Should facilities be required to disclose these analyses or recommendations resulting from such analyses to local authorities or the public prior to the selection of options? Are there any other disclosure options that will ensure that decisions on implementing safer technologies are made with transparency? Are there any means of oversight other than disclosure that would ensure that safer alternatives analyses are thorough and implementation decisions are appropriate?

The workers, emergency responders, and other members of communities at risk of a chemical disaster have a right to know that facilities have thoroughly investigated possible alternatives to extremely hazardous chemicals, and to ensure that the assessment was conducted with quality and credibility, and that management made good-faith decisions.

Both workers and communities should be able to provide input to and review alternatives assessments.

Facilities should be required to disclose their entire analysis. This would provide the most effective transparency and encouragement to conduct a complete, quality assessment.

As noted, covered facilities should be required to submit safer alternative options analyses and implementation plans to EPA as part of their RMP in order to help ensure the integrity of analyses and decisions. Review and sign off on assessments and decisions by certified, independent third-party planners, or by EPA, could also help ensure transparency and good-faith decisions. But such third-party or EPA review is not a substitute for disclosure to the communities and workers at risk.

Failure to disclose options assessed and conclusions would also severely limit the spread of information on safer alternatives within industries.

n. What would be the economic impacts of requiring facilities to analyze safer alternative options? Are there any special circumstances involving small entities that EPA should consider?

As noted above, the potential costs of a worst-case release can be enormous and many facilities that have converted to safer operations anticipate saving money. Using the RMP process to systematically generate information about potential liabilities, costs, avoided costs and savings will bring to light information on economic impacts and enable EPA, industry organizations, and others to assemble average cost information. This is an advantage of employing the RMP process to generate organized information, including costs and avoided costs, of alternatives. For industry sectors that commonly

include small entities and widely used alternatives, for example drinking water or wastewater facilities, EPA could provide guidance on conversion factors and costs derived from alternatives analyses submitted to the Agency and other sources.

A 2010 independent analysis of the 2009 bill (H.R. 2868) that passed the House of Representatives found that the conversions resulting from requirements to utilize IST or safer "methods to reduce consequences" (MRC) would have created 8,000 new jobs, especially within the chemical industry and water treatment sectors.[48]

Under the Massachusetts TUR program, small businesses often report the most significant benefits from the planning process. Providing technical and/or financial assistance to these businesses can help to ensure they achieve the maximum benefit from the process.

IV. Conversion to Safer Alternatives Must be Required Whenever One or More Alternatives are Safer, Available, Effective, and Affordable

Following an alternatives analysis submitted to the EPA as described in Section III, chemical facility owners and operators should be required to implement safer alternatives that eliminate or reduce catastrophic hazards where feasible by a date certain.

New requirements to implement inherently safer alternatives are necessary to achieve long overdue hazard reduction that has not been achieved by voluntary measures. As described in Sections II and V of these comments, over 100 million Americans continue to face catastrophic hazards from RMP facilities. In addition, large portions of our infrastructure are also at risk whenever disaster occurs.

As a result of the 2012 explosion and fire at the Chevron refinery in Richmond, California, the state formed an Interagency Working Group on Refinery Safety to address refinery hazards. On September 9, 2014, the California Department of Industrial Relations (CDIR) Division of Occupational Safety and Health released a draft rule that the CDIR says “will provide a framework for anticipating, preventing and responding to refinery safety problems at the earliest possible point.”

Specifically the draft rule says: "The employer shall select and implement first and second order inherent safety measures unless the employer can demonstrate in writing it is not feasible to do so. Where the employer does not implement a first or second order inherent safety measure, the employer shall document and justify in writing: (a) why that measure is not feasible; and (b) why the measures it has implemented are the most protective alternative measures feasible. If the inherent safety measure meets any of the following criteria, it shall be presumed feasible…."

[48] http://www.misi-net.com/publications.html

If a facility does not implement safer technologies they must show why safer measures are not feasible and/or why the measures they are implementing are the most protective feasible alternative measures.[49]

If alternatives assessment requirements alone were sufficient to reduce hazards, we would have seen more progress in New Jersey (NJ) where millions of people are still at risk. Unlike the Clean Air Act, the NJ program lacks legal authority to require the use of safer processes even where they are feasible. Today 93 NJ facilities still use large quantities of highly hazardous chemicals that pose a potential catastrophic hazard to workers and/or the public in the event of a worst-case toxic release caused by an accident, natural disaster or deliberate attack. They include chemical plants, oil refineries, sewage and water treatment works, bulk chemical handling and storage terminals, and food processing facilities. Five of these facilities each put 2 million or more people at risk of a chemical disaster.[50]

Since 2009, the EPA and Department of Homeland Security have advocated requirements to implement safer alternatives at chemical facilities. On March 3, 2010, Peter S. Silva, EPA Assistant Administrator for Water told the Senate Homeland Security and Governmental Affairs Committee, "Facilities posing the highest degree of risk should be required to implement IST method(s) if such methods enhance overall security, are feasible, and consider public health and environmental requirements.

In 2002, the EPA drafted a regulatory proposal advanced by EPA Administrator Christine Todd Whitman. The draft said:

> "Facilities would be required to consider hazard reduction opportunities in the preparation of implementation plans and to implement appropriate hazard reduction measures… Hazard reduction opportunities would include:
>
> (1) Making chemical processes inherently safer by reducing quantities of hazardous chemicals handled or stored, substituting less hazardous chemicals for extremely hazardous ones, or otherwise modifying the design of processes to reduce or eliminate chemical hazards…"

In 2006, as a U.S. Senator, President Obama authored and led legislative efforts to support requirements to implement inherently safer technologies (IST), saying: "I believe that the IST approach needs to be a part, not the whole, but a part of a rational comprehensive security legislation. Without it we're leaving a huge gap in our ability to manage the risks that these facilities represent."[51]

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[49] http://www.dir.ca.gov/dosh/doshreg/Process-Safety-Management-for-Refineries/PSM-Draft-Regulation.2014-09-09.pdf

[50] http://www.njwec.org/PDF/Reports/FailuretoAct_CompleteReport.pdf

[51] http://epw.senate.gov/public/index.cfm?FuseAction=Hearings.Choose&Hearing_id=d04878fe-802a-23ad-4b6e-5dfc40f1f744 and https://www.youtube.com/watch?v=YBtIKgGHYPQ

Since the first reporting of EPA's Risk Management Program (RMP) data in 1999, the Agency, industry and the public all learned for the first time the magnitude of these hazards. According to a 2012 Congressional Research Service (CRS) analysis of RMP data, 473 facilities each put 100,000 or more people at risk of a catastrophic disaster.[52]

Thanks to Freedom of Information Act requests the public has also become aware of hundreds of facilities that have switched to safer, cost-effective chemical processes and thus eliminated these hazards. Unfortunately, most of the facilities that have switched to safer processes are not in the highest risk categories according to reports by the Center for American Progress.[53]

Equally disturbing are the Congressional Research Service updates showing a steady increase in the total number (now approximately 12,700) of RMP facilities since 2009.[54] Clearly facilities are not voluntarily adopting safer alternatives to extremely hazardous chemicals.

As noted earlier (see page 7 of these comments), the U.S. Chemical Safety and Hazard Investigation Board recommended in May 2014 that EPA "require the documented use of inherently safer systems analysis and the hierarchy of controls to the greatest extent feasible when facilities are establishing safeguards for identified process hazards" in order to "reduce the risk of major accidents to the greatest extent practicable". [55]

New requirements to ensure that facilities use the safest processes available are clearly needed and overdue. Fortunately, the EPA also has abundant legal authority under §112(r)(7)(A) of the Clean Air Act to require chemical facilities to avoid or mitigate releases through the use of safer technologies. Section 112(r)(7)(A) provides the Agency broad authority to regulate chemical facilities in order to prevent accidental discharges:

> "In order to prevent accidental releases of regulated substances, the Administrator is authorized to promulgate release prevention, detection, and correction requirements which may include monitoring, record-keeping, reporting, training, vapor recovery, secondary containment, and other design, equipment, work practice, and operational requirements. Regulations promulgated under this paragraph may make distinctions between various types, classes, and kinds of facilities, devices and systems taking into consideration factors including, but not limited to, the size, location, process, process controls, quantity of substances handled, potency of substances, and response capabilities present at any stationary source. Regulations promulgated pursuant to this subparagraph shall have an effective date, as determined by the Administrator, assuring compliance as expeditiously as practicable. 42 U.S.C. § 7412(r)(7)(A)."

[52] https://www.documentcloud.org/documents/557127-crs-rmp-update-11-16-12.html
[53] https://www.documentcloud.org/documents/1214686-preventing-toxic-terrorism-cap-rep4-25-06.html
[54] https://www.documentcloud.org/documents/557128-crs-update-2009.html and https://www.documentcloud.org/documents/557127-crs-rmp-update-11-16-12.html
[55] http://www.csb.gov/assets/1/7/Tesoro_Anacortes_2014-May-01.pdf

The authority conferred by § 112(r)(7)(A) clearly encompasses the power to require the use of safer technology to reduce or eliminate quantities of extremely hazardous substances. The provision specifically authorizes the imposition of "design" and "operational" requirements, and further authorizes EPA to make distinctions among facilities based on "process controls, quantity of substances handled, [and] potency of substances." This authority is ideally suited to serve as the basis for regulations that require that facilities be designed and operated in such a manner as to minimize quantities of highly potent hazardous substances. And it permits regulation of any stationary source, thus permitting the Agency to regulate without regard to whether "threshold" quantities of substances are present (as under regulations pursuant to §112(r)(7)(B)) and without restrictions on the types of facilities subject to regulation (such as the limits imposed on DHS in establishing the CFATS regulations).

That EPA's authority under §112(r) encompasses the power to require measures to prevent release through eliminating or minimizing the use of dangerous chemicals is fully consistent with the intent of the enacting Congress. As the Senate Report on the 1990 legislation that added §112(r) to the Clean Air Act explains, such measures were viewed by Congress as the best way to achieve the statutory goal of preventing accidental releases:

> "The objectives of the proposed section … include both the prevention of accidental releases and the minimization of the consequences which may result. Systems and measures which are effective in preventing accidents are preferable to those which are intended to minimize the consequences of a release. Measures which entirely eliminate the presence of potential hazards (through substitution of less harmful substances or by minimizing the quantity of an extremely hazardous substance present at any one time), as opposed to those which merely provide additional containment, are the most preferred."[56]

V. Disproportionate Impacts to Communities of Color and Low-Income Communities Around RMP Facilities Must Be Addressed

EPA's Environmental Justice mandate, as established through Executive Order 12898 and the Agency's own policies and plans, requires EPA to identify and address ongoing discrimination that creates disproportionate adverse health and environmental effects in communities of color and low-income communities.

Our comments address four main points:

1. EPA has a clear mandate that requires the Agency to address disproportionate health and environmental impacts to communities of color and low-income communities.
2. Many communities of color and low-income communities are disproportionately burdened by pollution and by the threat and reality of catastrophic chemical releases from facilities covered by the RMP program.

[56] https://www.documentcloud.org/documents/404584-petition-to-epa-to-prevent-chem-disasters-filed.html

3. EPA's current RMP program and related policies and activities have failed to address the disproportionate danger and harm to these communities.
4. Specific policies and actions, which EPA has the authority to adopt, would begin to address this ongoing discrimination and protect health in these communities.

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires that EPA "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States."

More specifically, EO 12898 requires EPA to conduct its programs and activities in a manner that ensures that the Agency is not "denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such, programs, policies, and activities, because of their race, Color, or national origin."

EPA's own Plan EJ 2014 establishes goals to:

- Protect health in communities over-burdened by pollution;
- Empower communities to take action to improve their health and environment.

Extensive public and government research, a broad and deep academic literature, and the stories of community residents all thoroughly document disproportionate adverse health and environmental impacts in communities of color and low-income communities throughout the United States.

As early as 1971, the Council on Environmental Quality's Annual Report to the President connected race, income, and risk of exposure to toxic chemicals.[57] In 1983, the U.S. Government Accountability Office also correlated siting of hazardous waste facilities with the racial composition of the surrounding community.[58]

The 1987 report Toxic Wastes and Race found that race was the most significant variable predicting the location of hazardous waste facilities, and that this represented a national pattern.[59] The follow-up study Toxic Wastes and Race at Twenty determined that "racial disparities in the distribution of hazardous wastes are **greater** than previously reported."[60]

A very large volume of additional research (far too large to be fully summarized or cited

[57] The Second Annual Report of the Presidents' Council on Environmental Quality, August 1971, as cited in Annual Report of the Council on Environmental Quality (1993).
[58] GAO. 1983. "Siting of Hazardous Waste Landfills and Their Correlation with Racial and Economic Status of Surrounding Communities", U.S. Government Accountability Office, Washington, DC.
[59] Dr. Benjamin F. Chavis Jr. and Charles Lee, *Toxic Wastes and Race: A National Report on the Racial and Socio-Economic Characteristics of Communities with Hazardous Waste Sites* (Commission for Racial Justice, United Church of Christ, 1987).
[60] Robert D. Bullard, Ph.D., et al, *Toxic Wastes and Race at Twenty, 1987-2007* (United Church of Christ Justice and Witness Ministries, March 2007).

here), including research presented at EPA's 2010 science Symposium on the Science of Disproportionate Environmental Health Impacts, demonstrates widespread and persistent disproportionate health and environmental impacts to communities of color and low-income communities not only from hazardous wastes, but also from pesticide applications, vehicle emissions, toxic chemicals in consumer products, routine industrial emissions, and hazardous chemical releases from facilities covered under the RMP program.

For example, a 2011 paper presented at EPA's 2010 Symposium conducted a systematic review of 94 previous studies and determined that "many studies found significant relationships between residential proximity to environmental hazards and adverse health outcomes."[61]

Also, a 2014 paper applied three different inequality measures to determine that toxic air pollution is distributed very unequally in the U.S., and impacts communities of color and low-income communities very disproportionately.[62]

Specific to the RMP program, a May 2014 report found that communities and populations near 3,433 hazardous chemical facilities in the RMP program are disproportionately Black, Latino, and low-income.[63] The report ***Who's in Danger? Race, Poverty and Chemical Disasters*** analyzed the demographics of worst-case scenario vulnerability zones for 3,433 facilities included in the RMP program. The report used established methods to analyze information submitted by the facilities themselves under the RMP program and U.S. Census data to study the populations that could be impacted by a worst-case chemical release.

The analysis presented in the report documents a pattern previously observed in the location of toxic waste sites and other environmental and health hazards - that dangerous chemical facilities disproportionately endanger people of color and low income people, who are greatly overrepresented in chemical facility vulnerability zones and even more overrepresented in the "fenceline zones" nearest the facilities (defined as 1/10 the size of the full vulnerability zone). The report analyzed five demographic indicators (home value, household income, race and ethnicity, education level, and poverty rate) and found that:

- Residents of the fenceline zones closest to the facilities have average home values 33% below the national average and average incomes 22% below the national average;
- The percentage of Blacks in the fenceline zones is 75% greater than for the U.S. as a whole, and the percentage of Latinos is 60% greater;

[61] Jean D. Brender, RN, PhD, et al, "Residential Proximity to Environmental Hazards and Adverse Health Outcomes" (American Journal of Public Health, Supplement 1, 2011, Vol 101, No S1) pp S37-S52.
[62] James K. Boyce, Klara Zwickl, and Michael Ash, "Three Measures of Environmental Inequality" (Institute for New Economic Thinking, May 2014).
[63] Paul Orum, Richard Moore, Michele Roberts, Joaquin Sanchez, *Who's in Danger: Race, Poverty, and Chemical Disasters – A Demographic Analysis of Chemical Disaster Vulnerability Zones* (Environmental Justice and Health Alliance for Chemical Policy Reform, May 2014).

- The percentage of adults in the fenceline with less than a high school diploma is 46% greater than for the U.S. as a whole, but the percentage with a college or other post-high school degree is 27% lower;
- The poverty rate in the fenceline zones is 50% higher than for the U.S. as a whole.

The complete ***Who's in Danger?*** report has been submitted as a comment to this docket.

The September 2014 report *Kids in Danger Zones* (from the Center for Effective Government) also documents the disproportionate danger faced by children, many children of color and low income children, who attend school inside RMP facility chemical disaster zones. Houston, TX, Baton Rouge, LA, and Beaumont-Port Arthur, TX - communities that are heavily African American and Latino – contain the most schools in multiple chemical disaster vulnerability zones.[64]

Because EPA's current RMP program and related policies and activities have failed to address the disproportionate impacts of hazardous chemical facilities in communities of color and low-income communities, the Agency is effectively denying those communities and populations the benefits of the RMP program and allowing discrimination to continue.

EPA has the opportunity and responsibility to finally address the disproportionate impact of hazardous chemical use, storage, and releases on communities of color and low-income communities, and has the authority it needs to do so. However, only policies and actions that prevent catastrophic releases by significantly reducing and removing the underlying chemical hazards (rather than simply attempting to improve responses to disasters after they happen) will address the disproportionate impacts and begin to provide the health protection and empowerment mandated by EO 12898 and the Agency's EJ plans.

Only specific policies and actions will correct the failure of the RMP program to address ongoing discrimination and disproportionate impacts. Key recommendations (drawn from the more detailed recommendations that appear elsewhere in this comment) include:

- Assessment of potential safer chemicals and processes must be mandatory, and the results of alternatives assessments must be made public;

- Conversion to safer alternatives must be mandatory whenever one or more alternatives are available, effective, and affordable;

- Information on dangers and alternatives must be easily available to workers, communities, and first responders;

[64] Amanda Frank and Sean Moulton, *Kids in Danger Zones: One in Three U.S. Schoolchildren at Risk from Chemical Catastrophes* (Center for Effective Government, September 2014).

- Education and training for workers and fenceline communities must be dramatically improved;

- Communities and workers must become full partners in decisions about hazards and solutions; and

- The Risk Management Program must be expanded to include new elements and additional chemicals.

VI. Disclosure of Information on Hazards and Alternatives to Workers, Communities, and Governments Must be Dramatically Improved

Before we respond to the RFI's specific questions, we first want to comment on the current level of disclosure for RMP data. We believe that expanding access to unrestricted portions of facility RMPs is of great importance, and a necessary step towards involving local communities in chemical disaster prevention. Therefore, we advocate for the reestablishment of EPA's online access to RMP data.

An engaged and informed public is a vigilant public. Citizens, first responders, medical professionals, plant workers, and local officials all need to be better informed about chemical security and safety information in order to prepare for and prevent emergencies. Unfortunately, we have instead adopted an overly secretive approach that seeks to hide most, if not all, RMP data from the public. This prevents citizen vigilance.

Secrecy also inhibits preparedness. For instance, one of the groups signing on to these comments, the Center for Effective Government, recently published a report titled "Kids in Danger Zones: One in Three U.S. Schoolchildren at Risk of Chemical Catastrophes."[65] The report found that nearly 40,000 thousand schools are located within vulnerability zones RMP facilities. It is highly unlikely that each of these schools has a chemical disaster plan in place. In fact, since vulnerability zones can stretch several miles from the actual facility, many schools have no idea they are even at risk.

For example, the report found that nearly every school in Manhattan is in the vulnerability zone of a single bleach manufacturer in South Kearny, NJ. While these schools likely practice fire drills and other safety procedures, they are most likely not prepared for a possible chlorine gas leak originating several miles away. Keeping communities in the dark about chemical risks reduces their ability to prepare for potential disasters.

Excessive, unnecessary secrecy around RMP data can cost lives. Schools need to have chemical disaster drills in place. Community members need to understand how to respond to specific chemical releases in order to avoid evacuating into the path of a chemical hazard. First responders need to know what chemicals they are facing and

[65] http://www.foreffectivegov.org/kids-in-danger-zones

what emergency equipment to use. Doctors need to have the necessary information to treat those exposed to chemicals. Awareness, preparedness, and prevention save lives.

The 2013 West, Texas tragedy, which spurred President Obama's Executive Order, may wind up serving as a painful example of why this information is vital. The U.S. Chemical Safety Board's (CSB) preliminary findings suggest that local first responders "were not made aware of the explosion hazard from the ammonium nitrate stored at West Fertilizer." Emergency response guidelines state that some ammonium nitrate fires should be dealt with by evacuating the area and trying to contain the fire from a greater distance. However, the West volunteer firefighters were unaware that they were facing an ammonium nitrate fire, so they could not properly judge if these tactics should be used. And nearby residents, including an elementary school, hospital, and retirement home all within one mile of the facility, were almost certainly unaware of these risks or how to respond.

This is not an isolated case. In fact, six years prior to the West disaster, Carolyn Merritt, former Chair of the U.S. Chemical Safety Board, illustrated the devastating consequences that can occur when communities are inadequately informed about chemical risks. During a Senate testimony, Merritt noted a "lack of chemical emergency preparedness that our investigations have found among many communities where accidents strike."[66] Maximizing disclosure and access to RMP data will help companies reduce and remove hazards and enable communities to incorporate vital information into local emergency plans.

Much of the secrecy around unrestricted RMP data is implemented in an effort to prevent terrorism and safeguard communities. However, basic information about chemical hazards has been shown time and time again to make our communities safer. For instance, studies done on hazardous materials placards, digital maps and global positioning information, and biological research have each found that openness and disclosure is essential in keeping the public safe, and *helps us stay ahead of terrorists*. For instance, in 2003, the Department of Transportation explored the possibility of removing hazardous materials placards from trucks, railcars, and shipping containers to prevent theft or terrorist use. But the study found that "removal of placards offers little to no security benefit" and that the placards were a critical source of hazard information that facilitated effective emergency response and protected lives.

Agencies may be under the mistaken impression that hiding the information is safer, but in reality rail cars and other large tanks of chemicals cannot be themselves hidden, and attempting to restrict the information leaves communities more vulnerable and less prepared for the chemical accidents that are certain to occur.

Questions from Section D, Part 1, which are related to transparency and disclosure

[66] See http://www.csb.gov/csb-chairman-merritt-describes-the-lessons-from-five-years-of-board-investigations-to-senate-committee-urges-additional-resources-and-clearer-authorities-for-federal-safety-efforts/

"What role should local communities have in alternatives analyses? Should facilities be required to disclose their analyses or recommendations to local authorities and the public prior to selecting options?"

Facilities should engage with local communities on all parts of the RMP, including alternatives analyses, by disclosing options to local officials, local emergency planning committees (LEPCs), state emergency response commissions (SERCs), fire departments, and the general public prior to selecting options. The public has a right to know what prevention and control options are being analyzed, as these decisions directly impact their safety. Moreover, disclosing alternative analyses adds another layer of accountability to ensure facility compliance and promotes greater communication between facilities and communities.

For instance, local communities can provide facilities with useful feedback during pre-fire planning and other opportunities. Officials and LEPCs can point out how alternative options will impact community response and recommend options that minimize potential risk. They can also weigh in on whether facilities are considering and acting on all available options.

The industry often points to economic burdens as justification for not pursuing safer alternatives. Public disclosure of alternative analyses requires facilities to demonstrate that there are indeed additional costs associated with safer alternatives -- and that their cost analyses incorporate potential savings and avoided costs. Furthermore, it enables the public to weigh any economic costs with the benefits of increased safety and chemical security.

For instance, after the 9/11 attacks, the Blue Plains Water Treatment Plant in Washington, DC switched from using chlorine gas to liquid bleach in its water purification systems. This decision, which reduced the risk to 1.7 million people, also came with increased processing costs. But when spread out across customers, it amounted to a mere 25-cent increase in utilities per household per month.[67] Most people would agree that 25 cents per month is a small price to pay to protect the lives of 1.7 million residents.

Communities have a right to take part in these discussions and emphasize the overwhelming value of preventing chemical disasters.

"Are there other disclosure options that will ensure transparency in decisions on safer alternatives?"

Not only should facilities make this information available to the public systematically as part of RMPs, but they should also find ways to actively engage and communicate with local communities. This may include putting together a panel of facility representatives, local officials/LEPC members, and concerned citizens to discuss the impacts of possible

[67] Eliminating Hometown Hazards, Environmental Defense, 2003, Carol Andress, available at http://www.fcan.org/Press/wastewater_04.pdf

alternatives. This would empower the public to have voice in alternatives that directly impact their community, and forge greater communication between facilities and communities.

Questions from Section D, Part 8: Public Disclosure of Information to Promote Regulatory Compliance and Improve Community Understanding of Chemical Risks

"Would requiring RMP-covered facilities to post on a company Web site unrestricted (i.e., non-off-site consequence analysis) RMP information, such as the facility's RMP executive summary, emergency contact information, identity of the LEPC, or links to the local emergency response plan and/or the facility's most recent EPCRA Tier II report, lead to improvements in facility safety and better regulatory compliance?"

As we emphasized above, we believe that EPA should reestablish online access to RMP data. This should be made available through a searchable database on the EPA website. Making information for each facility available from a single, EPA supported website would aid in data consistency and searchability. Searchability should include such "key identifiers" as NAICS industry type, chemical, process, facility and parent company, and geographic location. It should give communities a one-stop source for accessing RMP data for all facilities. This is crucial, as many facilities lack websites or go by multiple names, making searching for individual facilities online an arduous and often unfruitful task. Segregating information in individual company websites is far less effective than making it available through organized databases (i.e., the RMP*National Database). Organized databases also allow communities to compare practices at local facilities with those in the same industry in other locations.

Furthermore, making unrestricted RMP information publicly available would increase compliance, as it enables communities to hold facilities accountable. The public can more readily gauge whether facilities are complying with regulatory requirements and whether safety measures are being implemented. It also gives facilities greater incentive to strengthen safety measures and to comply with regulations.

For example, EPA recently reached a settlement with the Fall River, Massachusetts Water Filtration Plant for failing to file its five-year RMP update in 2009 and in subsequent years, among other violations. Hiding away this data means that the public has no idea whether facilities in their area are even entirely failing to submit RMPs. Making RMP information accessible online enables communities to see when facilities are not complying and to demand EPA intervention.

Communities also need information on safer alternatives that can reduce or remove chemical hazards altogether. EPA should require facilities that deregister from the RMP program to provide basic information about how they were able to do so. While some facilities may have closed or moved, others may have changed chemicals or processes. Vital information on safer alternatives should not be corralled in individual company websites; it should be in organized and searchable public databases.

"Would disclosing a summary of the facility's compliance audit, PHA, or incident investigation reports to the LEPC result in improvements in emergency planning and response?"

As quoted above, the CSB has found a "lack of chemical emergency preparedness" during its incident investigations across the country. Inadequate information only contributes to this problem, as does poor coordination between LEPCs and facilities. Facilities must be required to disclose all relevant safety information to LEPCs. This should include the aforementioned information (compliance audits, PHAs, and incident investigations). With this information, active LEPCs can better include local communities in emergency planning and training.

"Would such disclosures raise any concerns regarding facility security or proprietary business?"

As we illustrated above, increased disclosure improves disaster response and saves lives. Moreover, RMP information is not specific enough to prove valuable to criminals. Information on the type and volume of chemicals stored at a facility does not provide information on *where* chemicals are stored within facilities, how to access them, what theft security measures are in place, etc. Similarly, this information is by no means proprietary, as it doesn't divulge how a facility applies the chemicals in their processes. As is established practice under emergency planning and community right-to-know laws, information that is already disclosed, already required to be disclosed, or readily available through general observation or reverse engineering is not considered proprietary or security information (see 42 U.S.Code 11042 - Trade Secrets); it cannot be realistically kept from disclosure.

For fourteen years, the Right-to-Know Network (www.RTKNet.org), a project of the Center for Effective Government, has made important EPA databases publicly available. These include the unrestricted sections of facility RMPs. Here, the public can search for facilities in their area, access information on the type and volume of chemicals used, review executive summaries, and find facility contact information. Making this information publicly available has not resulted in a single security or proprietary issue. Instead, it has proven vital to communities in advocating for safer practices both in their area and nationwide.

a. "Should EPA amend the RMP regulation to require RMP-regulated facilities to post chemical hazard-related information on their Web sites (if they have one) such as RMP chemical names, chemical quantities, executive summaries, links to LEPCs, community emergency plans, Safety Data Sheets (SDS) for hazardous chemicals present on site, EPCRA Tier 2 reports, release notification reports, accident history and cause and other similar information? What requirements should be considered for facilities that do not have a Web site?"

While this question acknowledges the importance of making this information available to the public, it takes the wrong approach by suggesting that facilities post this information

on their individual websites. Instead, we emphasize once again the importance of EPA reestablishing online access to RMP data.

Posting RMP data on company websites is a poor substitution for a comprehensive, searchable, and government-monitored database. This piecemeal approach would lead to inconsistencies in how the data is presented and would prevent searches and comparisons between facilities. Moreover, as the question acknowledges, not all facilities have websites. Others go by an alternative or corporate name, making it difficult to track down facilities in one's community.

A comprehensive RMP database on EPA's website would avoid these problems and provide the public with a single location to search for and analyze data across all RMP facilities.

b. "Would requiring facilities to make this information available on the company Web site promote improved regulatory compliance? What additional economic burden would be associated with such a requirement?"

As illustrated above, increased disclosure of RMP data only improves regulatory compliance. It gives facilities additional incentive to comply with requirements, and gives individuals the relevant information for holding facilities accountable. Moreover, if EPA reestablished its online RMP database, it would impose no additional burden on facilities.

c. "Do RMP-regulated facility owners/operators have any safety or security concerns with posting the executive summary from the RMP, or linking to EPCRA reports and community response plans on the company Web sites? Please explain any concerns regarding specific elements of this information."

The RMP executive summary does not contain the type of information that could pose a security threat to facilities. For instance, it does not offer specific information about where to access chemicals on site and what security measures are in place. Likewise, community response plans do not reveal the type of information that may help criminals breach security.

The real danger lies instead in keeping this information hidden from the public. As mentioned above, the Center for Effective Government's "Kids in Danger" report found that at least one in three U.S. schoolchildren attends school within an RMP facility's vulnerability zone. Yet many of their schools remain unaware of the dangers and lack chemical emergency plans. Emergency response plans and other RMP data should be made available online so that schools and other institutions can adequately prepare for chemical risks specific to their area. Otherwise, populations may respond incorrectly or risk evacuating into the path of danger. Informed communities also can encourage chemical facilities to reduce or remove chemical hazards that are beyond the reasonable capacity of local emergency preparedness to address.

d. "Would posting the RMP executive summary on a Web site cause facility owner/operators to remove important information from the executive summary? Does EPA need to better define the contents of an executive summary in order to allay security concerns?"

Facility owners and operators should recognize that the executive summary is part of the unrestricted section of the RMP data, and is therefore public information whether it is put on their Web site or not. If they have security concerns, they certainly should not depend on protecting their information simply by not putting it on their Web site. Even so, we have never encountered an instance in which security issues were raised by information in the executive summary of an RMP. On the other hand, some facility executive summaries contain almost no information or are markedly incomplete. EPA should therefore define minimum contents of an RMP executive summary, including in particular basic information about covered chemical processes.

e. "Is there other information (web-based or otherwise) that would assist local communities, emergency planners, and responders in understanding facility risks that should be made publicly available? For example, would disclosure of the facility's PHA or compliance audit to local authorities such as the LEPC result in improved safety?"

Information of this kind should be routinely shared with the facility's LEPC. But, perhaps just as important, EPA should track and share a measure of how many facilities have not had any kind of compliance audit recently with LEPCs, community groups, and the general public.

f. "Does your facility interact with community groups (e.g., a citizen advisory panel)? If so, what information do you provide to such groups?"

-N/A

g. "Are there other activities or measures that RMP-facility owner/operators can use to ensure that communities, planners, and responders have access to appropriate information?"

Access to information should include more than simply posting the information on a company website or through an EPA supported database. Facility operators must actively reach out to communities to provide them with the information as well as opportunities for public engagement. This may include things such as the formation of a citizen advisory panel that is consulted for evaluating alternative assessments, updating emergency plans, etc.

Facilities have an obligation to communicate information on chemical hazards and available alternatives to the communities in which they operate. They should reach out to not only LEPCs but other community groups to inform them of potential dangers and ensure that these groups have emergency plans in place. Special focus should be given to vulnerable populations such as schools, hospitals, and nursing homes.

h. "Can the use of social media or other forms of community outreach be incorporated into hazard assessment, prevention, and response to leverage community involvement in oversight? For example, would increased public disclosure of RMP-related information, such as accidental releases, near misses, and subsequent safety enhancements, or increased community involvement in facility emergency response planning, lead to improvements in facility safety? Please identify aspects of the RMP rule where there are opportunities for community involvement."

Facilities should be seeking community involvement in as many aspects as possible. This is especially important in emergency response planning, as communities need to be adequately informed on how to respond to specific chemical hazards. Community involvement should not just include LEPCs but school boards, hospital management, and other community leaders.

Social media is one tool that facilities can use to increase community involvement. First, social media allows facilities to educate the public on potential risks and increase awareness. It can also be used to generate greater participation in community meetings to discuss facility safety and other related issues.

A well-informed public is able to engage with facilities and will lead to improved safety measures.

VII. The New Jersey State Program and Contra Costa County, California Program Contain Important Elements But Must Be Improved to Succeed Nationally

It's important to stress that when the EPA considers New Jersey's and California's Contra Costa County safety programs, neither are able to adequately enforce the adoption of inherently safer systems and safer chemical processes.

A. The State of New Jersey Toxic Catastrophe Prevention Act (TCPA) provisions on Safer Alternatives

In regards to the Inherently Safer provisions of New Jersey's TCPA, we are persuaded by the detailed analysis and recommendations of the New Jersey Work Environment Council (WEC), a coalition of 70 labor, environmental, and community organizations working for safe, secure jobs and a healthy, sustainable environment.

Since its founding in 1986, WEC is been the leading advocate in New Jersey for adoption of state policies to ensure prevention of catastrophic chemical disasters. WEC's advocacy, with its partner organizations, has led New Jersey to issue precedent-setting policies to promote the adoption of inherently safer technology, or "IST". As a result, New Jersey workers and residents are safer today than they were before such measures were adopted.

Based on WEC's review, we conclude that EPA rulemaking should require, in part, that: facility management conduct an analysis and documentation of safer technologies and alternatives; that the implementation of safer technologies and alternatives be mandatory, where feasible; that workers and their unions be fully involved in the entirety of this process; and with few exceptions, information on all safer technologies and alternatives be made publicly accessible, both by facility management and the EPA.

We know that chemical catastrophes can be prevented. Learning from and improving on New Jersey's rules for promoting adoption of IST, the EPA can protect millions of workers and residents who face major threats to their health and safety.

New Jersey is the only state in the nation with IST requirements. Despite the manifest need, no federal Agencies have such requirements. United States Department of Homeland Security chemical security rules do not require IST. Nor do the EPA rules for prevention of accidental releases or the Occupational Safety and Health Administration's standard on Process Safety Management.

Background

After the Bhopal, India disaster in 1986, New Jersey enacted the Toxic Catastrophe Prevention Act (TCPA)[68]. The NJ TCPA Program was subsequently delegated by the EPA to implement the Federal Accidental Release Prevention rules developed under Section 112r of the 1990 Clean Air Act (40CFR68). New Jersey has had rules to promote IST adoption for more than a decade. In 2003, DEP first issued a limited IST rule. However, it applied only to a very few newly designed and constructed processes. Then, in 2005, NJ issued mandatory Best Practices Standards (BPS) for chemical plants. These required 43 TCPA facilities to conduct one-time IST reviews.

DEP's expanded IST rules were adopted and published in the May 5, 2008 New Jersey Register. These IST rules required all facilities subject to TCPA rules to submit an IST review report to DEP by September 2, 2008.

Overview of the NJ IST Rule

Under the current New Jersey rule, IST means the principles or techniques that can be incorporated in a "covered process" regulated by TCPA to minimize or eliminate potential for a release of an "extraordinarily hazardous substance (EHS)." This includes: reducing the amount of EHS material that may be released, substituting less hazardous materials, using EHSs in the least hazardous process conditions or form; and designing equipment and processes to minimize potential for equipment failure and human error.

[68]Title 13: The Toxic Catastrophe Prevention Act see (13:1K-20) on legislative findings and declarations. http://www.nj.gov/dep/rpp/brp/tcpa/downloads/title13.htm

A “covered process” under TCPA is defined as any activity involving use, storage, manufacturing, handling, or on site movement of an EHS material that meets or exceeds its threshold quantity.

As of September 2014, 93 New Jersey facilities were regulated by TCPA. These include chemical, plastic, and pesticide manufacturing plants, oil refineries, major food processors, water and wastewater treatment, and liquefied petroleum gas facilities. Management of these facilities must complete an IST review report and submit it to DEP. The report “…shall identify available IST alternatives or combinations of alternatives that minimize or eliminate the potential for an EHS release.”

The rule states that an IST review report must be prepared by “…a team of qualified experts, convened by the owner or operator, whose members shall have expertise in environmental health and safety, chemistry, design and engineering, process controls and instrumentation, maintenance, production and operations, and chemical process safety.” The names, qualifications, and experience of team members must be in the report. DEP also says that the review must include “front line workers and their representatives.”

While there is no specific language about worker participation in this specific DEP IST rule, Section 68.83 of the federal EPA rules for accidental release prevention still applies and requires “…consultation with employees and their representatives…” and ensures union access to information.

The employees that participate in the PHA and IST team must have the specific knowledge and experience stated in the team requirements.

Management must determine whether the IST alternative is “feasible.” According to the rule, “feasible means capable of being accomplished in a successful manner, taking into account environmental, public health and safety, legal, technological, and economic factors.”

If management decides not to implement the IST, they must provide a written justification using a qualitative and quantitative evaluation of environmental, public health and safety, legal, technological, and economic factors.

If they decide to implement the IST, they must provide a schedule of when they will do it.

An update is required every five years for all covered processes and at the same time as the updates of applicable hazard reviews or process hazard analysis. An update of the IST review is also required when there is a major change.

An owner or operator may file a claim with DEP to withhold from public disclosure confidential information included in an IST review report. DEP reviews IST reports, inspects facilities, and can assess financial penalties for violations.

A Partially Successful Program

New Jersey's IST review requirements have clearly made workers and communities safer. A DEP progress report issued in 2010 called "Inherently Safer Technology (IST) Implementation Summary" (reprinted in Appendix A with this submission), provides information about 143 cases of adoption of ISTs reported to DEP by facility management. This was in addition to earlier progress made under TCPA before the IST reviews were required, including that approximately 300 New Jersey water and wastewater treatment plants which formerly used chlorine and converted to safer processing methods using UV radiation, ozone, or sodium hypochlorite for disinfection.

Some New Jersey IST Success Stories (Source: NJ DEP, March 2007)

I. Substitution of a less hazardous substance that have occurred under TCPA

- Wastewater treatment facilities have switched from using chlorine to sodium hypochlorite for disinfection of treated wastewater.
- Electric generation and cogeneration plants substituted anhydrous ammonia with aqueous ammonia for use in their air pollution control systems.
- A facility switched from chlorine to bromochlorohydantoin for use as an algaecide in treating cooling water.

II. Reduction in the amount of a hazardous substance stored on-site

- A facility switched from bulk storage of liquid sulfur trioxide to on-site generation of gaseous sulfur trioxide for direct consumption into the process.
- A facility switched from bulk storage of chlorine to on-site generation of ozone for disinfection of potable water.
- A facility is proposing to switch from bulk storage of chlorine to on-site generation of chlorine dioxide for bleaching paper.

However, these programs sometimes include control methods that perpetuate rather than prevent hazards. While such control methods may be appropriate for unavoidably hazardous operations, they should not be considered a primary prevention strategy. For example, New Jersey includes as "inherently safer technology" warning labels, leak detectors, thermal imaging cameras, fogs/sprays/deluge systems, spill containment, toxic gas scrubbers, and other non-IST measures that control rather than remove or reduce intrinsic chemical hazards.

The EPA can avoid replicating this problem by setting a backstop that are proposed elsewhere in these comments: prevention methods that reduce the consequences of a chemical release should not include measures that (a) are intended to contain, control, mitigate, or recover the release of a substance of concern; and (b) could be breached,

disabled, deficient, or bypassed in the event of a release of a substance of concern (including an intentional criminal release).

A Federal IST Program Should Improve Upon New Jersey Precedent

Despite the progress the TCPA has made in the last 28 years the program does have its shortcomings. There are 93 New Jersey facilities that continue to use large quantities of highly hazardous chemicals that pose a potential catastrophic safety and health risk to workers and/or the public. The situation could be made quite worse by a "worst case" toxic release caused by an incident or a deliberate attack. Thus they remain registrants in the NJ TCPA program. They include chemical plants, oil refineries, sewage and water treatment works, bulk chemical handling and storage terminals, and food processing facilities. More than one-third of the facilities are using one of three toxic chemicals – chlorine, hydrofluoric acid or anhydrous ammonia – that have industry-proven alternatives.

There are five New Jersey facilities at which a worst-case release of toxic chemicals could place at risk any of more than two million people living in the vulnerability zone. These facilities include chemical manufacturers and an oil refinery. Each of these facilities could eliminate or significantly reduce the use of extraordinarily hazardous substances by producing the chemical on-site as needed, completely replacing the chemical, or using a diluted form of the toxic chemical.

The New Jersey experience offers at least five lessons for federal policy makers

Rules requiring IST reviews have prodded facility management to take measures to protect millions of workers and community residents from serious, preventable hazards. Therefore, the EPA should also require facility management across the nation to conduct a similar, but improved, analysis and documentation of safer technologies and alternatives.

In New Jersey, adoption even of feasible IST is not required. Ninety-three facilities in 19 of 21 NJ counties remain as registrants in the DEP's TCPA program because each can pose a potential catastrophic risk to the public. Therefore, the EPA should require the adoption of feasible technologies and alternatives (without making any determination of the specific technology, design, or process).

More progress to reduce risks could likely have been made if all NJ IST reviews were publicly accessible. More than 50 percent of the IST reports submitted by management to DEP were claimed "confidential." Unfortunately, DEP has not challenged any of these determinations. Transparency is a prerequisite for public oversight and a public spotlight could further prod facility management to adopt safer chemicals and processes. Moreover, the facilities that have actually adopted them – and thus likely pose less of a risk – should receive public credit for their positive steps. The EPA should require submission of alternatives analyses to the Agency, and make them publicly available for review online and through other means.

It is essential that IST options and IST principles be precisely defined. Under NJ IST rules, facilities are sometimes claiming that they have adopted IST when in fact they have not. Chemical substitution and process changes are the most effective methods to protect workers and the public from incidents. "Inherently" safer options should be distinguished from less effective control and management methods such as safer extremely hazardous substance risk location, protection of storage vessels from weather conditions, changes in truck traffic patterns, addition of EHS leak detectors, use of closed circuit television systems, labeling of valves and equipment, revising procedures, installing a simulation training station, and adding light towers for EHS leak alarms. While these can be good safety practices and may fulfill requirements under other laws, they should not be considered methods to achieve inherent safety.

The EPA should require facility management to comprehensively document their claims that adopting safer chemicals and technologies is not feasible. All but four facilities whose IST reports were publicly available and reviewed by WEC claimed that making such changes was not feasible. When claiming infeasibility for economic reasons, management should be required to quantify specific economic benefits of adopting safer options, such as reduced liability and insurance costs and public benefits such as savings to municipalities for reduced emergency response and savings to workers and affected residents for medical care, property damage, etc.

B. Contra Costa, California Program

Shortcomings can be found in California's Contra Costa's Industrial Safety Ordinance (ISO). The multiple policies that aim to provide oversight and address safety and prevention of hazardous events create a difficult environment when there is insufficient authority to ensure the adoption of inherently safer systems.

The Contra Costa County's safety ordinance was adopted in 1999 to improve industrial safety by requiring more comprehensive coverage throughout the whole facility rather than only certain processes.

The Contra Costa County Industrial Safety Ordinance expands on the California Accidental Release Prevention (CalARP) program, which is California's state based RMP program. CalARP oversees 45 facilities in Contra Costa County including the Chevron Refinery in the city of Richmond.

Seven of the forty-five facilities are required to comply with Contra Costa's program. Facilities operating in Contra Costa County have to meet the following criteria to be compliant as detailed in the County's Industrial Safety Ordinance (ISO): "1) the facility is within an unincorporated area of the County; 2) the facility is either a petroleum refinery or chemical plant; 3) the facility is required to submit a Risk Management Plan (RMP) to the EPA and the Contra Costa County Health Service; and 4) the facility has at least one Program 3 process."[69][70]

[69] http://www.csb.gov/assets/1/19/Chevron_Regulatory_Report_06272014.pdf [p88]

The city of Richmond in 2001 introduced its own industrial safety ordinance (RISO) that requires safety plans to be submitted in addition to the plans required under Contra Costa's program. In 2013, amendments were made to RISO to make it equivalent to Contra Costa's program.

The Contra Costa County program includes: providing review, inspection, auditing and safety requirements more stringent than are currently in effect. It also requires the development and implementation of a "human factors program"; and preventing and reducing the number, frequency and severity of accidental releases in Contra Costa County.[71] Facilities covered under Contra Costa's program must also comply with CalARP program 3 prevention requirements[72]. Very much like the New Jersey program, the IST requirements under Contra Costa's program creates voluntary agreements and as a result companies are less likely to switch to safer equipment or safer chemicals when available to prevent disasters.

Very much like the New Jersey program, Contra Costa's program creates voluntary agreements but has no requirements to use safer equipment or safer chemicals when available to prevent disasters.

The U.S. Chemical Safety Board (CSB) reported that a deficiency of both Contra Costa's program and RISO are that "facilities covered by RISO or ISO are only required to "consider [emphasis added] the use of inherently safer systems in the development and analysis of mitigation items resulting from a process hazard analysis [PHA] and in the design and review of new processes and facilities."441

The CSB findings illustrate that under the Contra Costa County program the Richmond Chevron refinery failed over a ten year period to apply safer design principles, and more effective control mechanisms and upgrade piping in its crude processing unit that was found corroded and led to a rupture.[73]

The investigation of the Chevron refinery fire in Richmond on August 6, 2012 found that a management failure to implement IST led to a massive explosion which resulted in 15,000 people seeking medical attention and suspended public transportation in the area.

In previous investigative reports by the CSB revealed that current safety regulations did not require Chevron to install preventative safety measures like the ones described, underscoring the serious gap in regulations.

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[70] http://cchealth.org/hazmat/pdf/iso/2006_iso_official_code_complete.pdf
[71] http://www.csb.gov/assets/1/19/Chevron_Regulatory_Report_06272014.pdf [p88]
[72] For more information about CalARP requirements see http://www.csb.gov/assets/1/19/Chevron_Regulatory_Report_06272014.pdf [p87]
[73] http://www.csb.gov/assets/1/19/Chevron_Regulatory_Report_06272014.pdf

In response to the 2012 Chevron refinery explosion, California's Gov. Brown formed an Interagency Working Group on Refinery Safety which issued a report in July 2013 which stated that, "had an inherently safer system approach been in place at its Richmond refinery, Chevron would have been forced to demonstrate why continuing to use low - silicon metal susceptible to corrosion was the best solution, given other inherently safer options."[74]

The report also said, that "enforceable requirements for inherently safer systems could be incorporated into the CalARP and PSM programs, or they could be required in legislation adopting major components of the Contra Costa County ISO into California law...."[75]

Governor Brown's Refinery Task Force is currently in the process of evaluating statewide IST requirements. The repeated incidents at the Chevron Refinery point to the failure of regulatory systems to implement IST. If measures are only voluntary history has shown that they won't be broadly deployed and could cause substantial future catastrophic risk to workers and community members.

While Governor Brown looks at both systems in Richmond and Contra Costa County as the state moves forward to develop IST requirements we urge the EPA to amend the RMP program by requiring IST and conversion requirements to eliminate future catastrophic risk and hazards.

On September 9, 2014, the California Department of Industrial Relations (CDIR) Division of Occupational Safety and Health released a draft rule that the CDIR says "will provide a framework for anticipating, preventing and responding to refinery safety problems at the earliest possible point."

Specifically the draft rule says: "The employer shall select and implement first and second order inherent safety measures unless the employer can demonstrate in writing it is not feasible to do so. Where the employer does not implement a first or second order inherent safety measure, the employer shall document and justify in writing: (a) why that measure is not feasible; and (b) why the measures it has implemented are the most protective alternative measures feasible. If the inherent safety measure meets any of the following criteria, it shall be presumed feasible...."

If a facility does not implement safer technologies they must show why safer measures are not feasible and/or why the measures they are implementing are the most protective feasible alternative measures.[76]

VIII. Training and Engagement of Workers and Communities Must Be Strengthened

[74] See http://www.calepa.ca.gov/Publications/Reports/2013/Refineries.PDF
[75] See http://www.calepa.ca.gov/Publications/Reports/2013/Refineries.PDF
[76] http://www.dir.ca.gov/dosh/doshreg/Process-Safety-Management-for-Refineries/PSM-Draft-Regulation.2014-09-09.pdf

Catastrophic chemical and process disasters are replete with a contributing cause whereby failed management strategies send poorly trained and unaware workers into harm's way, thereby precipitating ever more deadly workplace and community failures. In similar fashion, community members are kept ignorant of the dangers of high hazard chemicals and processes near them and of appropriate ways for them to respond during disastrous releases, and denied input into planning and decision making, which compounds the catastrophic consequences. As cited earlier, our recommendations are motivated by memories of the incompetence of Texas City port authorities and shipping magnates, and the unprepared state of fire chiefs, hundreds of laborers, and the community, in 1947. And, we recall the monumental ignorance and incompetence of Union Carbide's Bhopal plant manager, engineering team, line workers and the thousands of innocents in the nearby fenceline community in 1984. Governmental policies that fail to redress these inequities also significantly contribute to process disasters.

The involvement of facility employees is critical to ensuring that stakeholders with much at stake and deep experience and knowledge are fully engaged in planning and implementation to protect our nation's infrastructure. Workers and their representatives need to have the right to participate in inspections and alternatives assessments. All too often, workers are at risk for voicing an opinion that differs from their supervisors' opinion. Therefore EPA must adopt strong protections for whistleblowers to ensure that employees (including employees of contractors) can effectively and anonymously report safety issues and concerns. Both workers and communities must have adequate education and training to participate in and review alternatives assessments, and participate in inspections and decisions.

EPA should investigate the possible establishment of one or more systems (in specific industry sectors) of anonymous reporting of safety problems similar to the Federal Aviation Administration's Aviation Safety Action Program.[77] The FAA system encourages the reporting of safety-related events anonymously in the aviation industry, even when they may involve mistakes on the part of the reporting employee. OSHA should strive to test a similar model in one or more high-hazard industry sectors, such as refineries.

Future training priorities must include building worker and community competencies to participate in safer alternatives assessment and the implementations of safer alternatives. We are informed by rules for the New Jersey TCPA that the IST review report must be prepared by "…a team of qualified experts, convened by the owner or operator, whose members shall have expertise in environmental health and safety, chemistry, design and engineering, process controls and instrumentation, maintenance, production and operations, and chemical process safety." The names, qualifications, and experience of team members must be in the report. NJ DEP also says that the review must include "front line workers and their representatives."

[77] http://www.faa.gov/about/initiatives/asap/

While there is no specific language about worker participation in this specific NJDEP IST rule, Section 68.83 of the federal EPA rules for accidental release prevention still applies, and requires "…consultation with employees and their representatives…" and ensures union access to information.

The employees that participate in Process Hazard Analyses and on IST teams must have the specific knowledge and experience stated in the team requirements. This is one of the bases for our primary recommendation on new training requirements.

We recommend that EPA issue new regulations that set specific training requirements for workers engaged in high hazard chemical process industries.

Further, **we recommend that EPA employ a new training model** beyond the systems used in meeting the requirements of the Hazardous Waste Operations and Emergency Response Standard administered by OSHA.

History of Worker and Community Education and Training

America's shocked recognition in 1978 of the Love Canal disaster[78] awakened the national recognition of the need to control and contain toxic hazardous waste. Well-validated public heath concerns over exposures to lurking toxic chemicals soon fostered the 1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).[79] However, unacceptable worker and community exposures to toxic chemicals during the early years of waste cleanup prompted major CERCLA revisions in 1986 through the Superfund Amendments and Reauthorization Act - including new provisions that set variable training requirements for specific groups of workers whose level of required training depends on the role and responsibilities the worker is expected to perform.[80]

We recognize the importance of the workforce to identify chemical hazards and understand safe practices for disposing contaminated materials. However, specific training on process safety and risk management are an essential management responsibility that underpins the larger system of safety, particularly training in methods that are truly preventative. EPA must ensure worker competencies to understand all component elements of the RMP, including the advanced capacity to competently participate in process hazard assessments and safer alternatives assessments.

Follow California's New RMP Pathway on Training

On August 6, 2012, the Chevron refinery in Richmond, California, experienced a catastrophic pipe failure, releasing high-temperature flammable fluid that partially

[78] Gibbs, Lois Marie. Love Canal: My Story. Grove Press, New York (1982).
[79] http://www.gpo.gov/fdsys/granule/USCODE-2010-title42/USCODE-2010-title42-chap103/content-detail.html
[80] https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9765#1910.120(a)(1)

vaporized into a large cloud. The vapor cloud engulfed 19 employees, including one Chevron firefighter who escaped through the ensuing fire. All 19 employees narrowly avoided serious injury or death. The ignition and combustion of the vaporized fluid created a large smoke plume that spread well beyond the refinery confines, causing approximately 15,000 people in the surrounding communities to seek medical attention during and immediately following the incident.[81]

The Chevron Corporation, with a net worth of $227 billion, can claim no monetary insufficiency excuse for its flagrantly poor process safety system.[82] The final report of the U.S. Chemical Safety Board concluded:

> Chevron employees have recommended implementing inherently safer designs through the MOC process, incident investigations, technical reports, and past employee recommendations. However, the CSB has not identified any documented, thorough analysis of the proposed inherently safer solutions. In addition, Chevron has repeatedly failed to implement proposed inherently safer recommendations. Had Chevron implemented these recommendations, the incident could have been prevented.[83]

We remind EPA of its own List of Findings in the Enforcement Compliance Audit of the Chevron Richmond Refinery relating to training, **explicitly recognizing that management has the systems responsibility for ensuring that only well-trained workers operate within the vicinity of high hazard chemicals and processes**:

> FINDINGS 20 – 21: TRAINING (40 CFR § 68.71)
>
> Requirement found at Subpart D – Prevention Program – Operating Procedures, 40 CFR § 68.71(b). Refresher Training.
>
> Refresher training shall be provided at least every three years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process; and (c) Training documentation. The owner or operator shall ascertain that each employee involved in operating a process has received and understood the training required by this paragraph. The owner or operator shall prepare a record which contains the identity of the employee, the date of training, and the means used to verify that the employee understood the training.
>
> - EPA reviewed an internal Chevron evaluation of their training program conducted in June 2007. EPA concludes that deficiencies in the training program were indicated.
>
> - Details of the August 6, 2012 incident reveal inadequate training of personnel,

[81] http://www.calepa.ca.gov/publications/reports/2014/refineryrpt.pdf
[82] http://www.forbes.com/companies/chevron/
[83] http://www.csb.gov/assets/1/19/Chevron_Regulatory_Report_06272014.pdf, see page 74.

as evidenced by the lack of full recognition of the risk of piping rupture and the possibility of auto-ignition.

- RMP requires that the refresher training be provided, at least every three years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process.

    - **Finding 20**: Chevron failed to ensure that refresher training for employees was frequent enough so that employees understood and adhered to the current operating procedures of the process, as required under 40 CFR § 68.71(b).

- The Contra Costa Health Services (CCHS) Hazardous Materials Program conducted an audit of Chevron's program under California Accidental Release Prevention Program (CalARPP) and completed a Preliminary Determination by CCHS Hazardous Materials Program dated July 7, 2011 (A-14-03 CalARP&ISO). As stated in the audit preliminary determination report, the Hazardous Materials Program auditors found that during training, many of the slides provided links to other documents (emergency procedures, consequences of deviation). Operators are expected to read over the other documents – although the text may or may not include that expectation. Specific to operating procedures, operators are expected to know where they are and to follow them, but there is not verification that operators actually followed the links and actually reached the other documents.

- As a result of the CCHS audit, CCHS required that Chevron ensure that the auditing process was expanded to confirm that operators are following the procedures as intended (e.g. procedure printed, used in the field, filled out as steps are completed, and tasks are performed in the order identified in the procedure).

- The updated Chevron incident investigation report on the August 6, 2012 Richmond fire, dated April 12, 2013, to the Certified Unified Program Agency (CUPA) provides examples of instances in which employees were not trained adequately in the execution of operating procedures.

- Many of Chevron's incident investigations identify a lack of communication between various personnel groups and between personnel and management as causal factors in the incidents. Chevron's investigation of the August 6, 2012 incident similarly identified lack of communication as a causal factor. More discussion of these finding can be found in the "Incident Investigation" section of this Summary of Findings. (See , Findings 44 – 48 below.)

- CCHS, Hazardous Materials Program's Preliminary Determination, issued on July 7, 2011, details that the CCHS auditors asked the following question to

Chevron personnel (A-25-09 RISO) – "Are operating teams trained together in the transfer of information" (Question 4-16)? And the answer was: "No formal training is given to the operations personnel regarding the transfer of information."

- EPA reviewed five internal Chevron Incident Investigation reports, including the final report on the August 6, 2012 incident. EPA concludes that these reports show deficiencies in training.

- Lack of training on the transfer of information appears to be a factor in causing the August 6, 2012 incident. As stated in Chevron's April 12, 2013, update to its report to CCHS: the incident "…occurred at change of shift and most of the dayshift personnel stayed to assist the nightshift personnel and were engaged in supporting and performing the insulation removal tasks. There was not a single meeting where all parties collectively considered the potential risks and outcomes."

- In discussions with plant personnel during EPA's inspection and in a review of Chevron's latest update to the CCHS auditor on April 12, 2013, it was clear that the information indicating that the material in the pipe was near its auto-ignition temperature was not relayed to all those individuals making strategic decisions. The latest update states: "While operations personnel understood that the material was near its auto ignition temperature, some Chevron Fire Department personnel thought the temperature was near or below its flash point".

    - **Finding 21:** Chevron failed to ascertain that each employee involved in operating a process has received and understood the training required. The owner or operator shall prepare a record which contains the identity of the employee, the date of training, and the means used to verify that the employee understood the training, as required under 40 CFR § 68.71 (c).

We recommend that EPA acknowledge and support the California Oil Refinery Initiative - an effort quite analogous to and yet more accelerated than the federal working group's efforts on the E.O. We recommend that EPA adopt California's RMP language on training as an important advance. We recommend that training requirements be expanded to all EPA RMP facilities.

In response to the Chevron Incident, the CA DIR published draft regulations requiring enhanced training:[84]

DRAFT PSM Regulatory Text
Process Safety Management for Refineries
Proposed General Industrial Safety Order 5189.1

[84] http://www.dir.ca.gov/dosh/doshreg/Process-Safety-Management-for-Refineries/PSM-Draft-Regulation.2014-09-09.pdf

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(g) Training.

(1) Initial training. Each employee involved in operating or maintaining a process, and each employee prior to working in a newly assigned process, shall be trained in an overview of the process and in the operating procedures, as specified in subsection (f). The training shall include material on the specific safety and health hazards, procedures, and safe practices applicable to the employee's job tasks.

(2) Refresher and supplemental training. At least every three years, and more often if necessary, refresher and supplemental training shall be provided to each operating or maintenance employee and other employees in order to ensure safe operation of the facility. The employer, in consultation with employees involved in operation or maintenance of a process, shall determine the appropriate frequency and content of refresher training.

(3) Training certification. The employer shall ensure that each employee involved in the operation or maintenance of a process has received, understood and successfully completed training as specified by this subsection. The employer, after the initial or refresher training, shall prepare a certification record containing the identity of the employee, the date(s) of training, the means used to verify that the employee understood the training, and the signature(s) of the person administering the training.

(4) The employer shall establish and implement employee testing procedures to ensure competency in job skill levels and work practices that protect employee safety and health.

EPA should follow a similar approach.

Employ the training model systems used in meeting the requirements of the Hazardous Waste Operations and Emergency Response Standard by the NIEHS Worker Education and Training Program

Working with hazardous waste can be dangerous. Working with hazardous chemicals and processes can be even more dangerous. We recognize that America has hundreds of thousands of sites to clean up, and many operating plants and facilities containing hazardous materials. We also recognize the essential progress towards worker health and safety derived from the HAZWOPER standard. Recognizing the need for the standard to be rapidly and competently implemented, Congress, through the Superfund Amendments and Reauthorization Act, also assigned to the National Institute of Environmental Health Sciences (NIEHS) responsibility for a Worker Education and Training Program (WETP). The WETP program supports the training and education of workers engaged in activities related to hazardous materials and waste generation,

removal, containment, transportation and emergency response.

The WETP conducts training through a network of cooperative agreements with nonprofit organizations. The WETP includes basic hazardous waste worker, minority worker, Brownfields, Department of Energy nuclear weapons complex, and national emergency preparedness training components. Since the program's inception in 1987, more than two million workers have been trained.

The WETP grantees train subspecific audiences relevant to RMP compliance:

- industrial process safety workforce who are intimately involved with day-to-day facility operations, including those involving highly hazardous chemicals and processes, and other equipment and operations in close proximity;
- emergency response workforce, including fire and police, whose responsibilities before an incident can include facility assessment for emergency response and prevention, and after an incident should augment the oversight of safety improvements; and
- contract workforce who have primary responsibilities for implementing capital improvements to the process safety infrastructure either while facilities are in operation and/or during temporary shutdowns as major process and storage equipment is replaced and overhauled.

The NIEHS WETP network is supported through a five-year renewable competitive grant process, fostering continual improvements. The program has demonstrated partnering experience with other federal Agencies to support related training needs. Many other enhancements have developed since its inception:

- creating a national Clearinghouse for curricula and technical reports[85]
- providing support for trainer exchanges, train-the-trainer and peer training programs,
- providing special workshops to enhance training effectiveness,
- developing special skills in meeting special needs populations, including training in languages most relevant to the workers
- developing special competencies in recognizing literacy issues during training,
- promoting advanced training technologies and better models of adult education,
- skills in outreach to engage and train environmental justice communities
- promoting new partnerships between grantees and private businesses to fund and execute training for their workforce
- rapidly responding to urgent needs, such at the 9C-11 challenges with the World Trade Center, and multiple chemical failures associated with Hurricanes Katrina and Sandy.

The WETP also has been exemplary for promoting greater coordination of training needs for workers with community members as part of a larger environmental justice

[85] http://tools.niehs.nih.gov/wetp/

program within the Department of Health and Human Services.

We recommend that EPA incorporate the knowledge, skills and infrastructure of the WETP program as it designs and implements new training requirements to assess and implement safer alternatives.

IX. Additional Responses to Other RFI Questions

RFI C.1.a. Adding Other Toxic or Flammable Substances
What other chemical lists or other sources of information should be reviewed to identify acutely toxic or flammable chemicals meeting the RMP listing criteria?

EPA should review the OSHA PSM list of highly hazardous, toxic, or reactive chemicals and add to the RMP program any that are not currently on the RMP list. EPA should also review the New Jersey Toxic Catastrophe Prevention Act (TCPA) list of Extraordinarily Hazardous Substances and add to the RMP list. As just one example, thionyl chloride (7719-09-7) is reported by a facility under the New Jersey TCPA program but not under the federal RMP program.

The Agencies should harmonize the lists of chemicals that are covered under each Agency's policies. The EPA's RMP list of Regulated Toxic Substances contains 77 toxic chemicals and 63 flammable substances. OSHA's PSM Programs lists 137 chemicals considered Highly Hazardous, Toxic or Reactive. Currently, too many dangerous chemicals are not listed and therefore are not reportable under RMP.
An example of one such chemical is 1,2-Butadiene. While its close cousin, 1,3-Butadiene, is reportable under EPCRA 313 (TRI) and by definition, under the Process Safety Management standard, it is not listed as an RMP chemical.

RFI C.1.c. Adding Ammonium Nitrate

We recommend that EPA list Ammonium Nitrate (AN) as an RMP chemical and require that distribution facilities, to the greatest extent feasible, substitute AN with inherently safer alternatives, or, as a minimum until that is completed, establish adequate setbacks from sensitive populations and conform to the requirements of the latest version of NFPA 400, Chapter 11 on AN.

Further, we urge EPA, OSHA, NIOSH, and the Agriculture Department to systematically research the technical efficacy, costs, and trade-offs of the several reported AN substitutes or alterations (e.g., physical form, mixing with other salts, substitution by other sources of desired minerals) including any environmental and lifecycle impacts of such changes.

EPA should work with the other members of the Working Group to develop a vigorous compliance assistance and education campaign to reach the newly regulated parties with the relevant guidance.

RFI C.1.d. Adding Reactive Substances and Reactivity Hazards

i. What are the best criteria to use in classifying reactive hazards? How do you identify a reactive chemical or a reactive mixture?

As the CSB has recognized, reactivity is not necessarily an intrinsic property of a chemical substance. Rather, the hazards associated with reactivity are determined by the chemicals and processes used. Therefore, coverage of reactive hazards should not be based on a list, but rather on a requirement that covered employers systematically examine their materials and processes for the potential of a hazardous reaction. Employers should be required to evaluate their chemicals during all conditions foreseeable during the process and in any interactions occurring in the process.

In addition EPA should require use of multiple sources of information on reactivity of process chemicals. Multiple sources of information that could be consulted are laid out in the Recommendation Section of the CSB report[86] and include:

- Literature surveys of references such as Bretherick's Handbook of Reactive Chemical Hazards, Sax's Dangerous Properties of Industrial Materials;
- Information developed from computerized tools, such as The Chemical Reactivity Worksheet;
- Chemical reactivity test data produced by employers or obtained from other sources;
- Relevant incident reports from the plant, corporation, industry and government.

The information used to evaluate the hazards from a chemical should also include the use of a reactivity matrix. This matrix will identify the reactive properties of the pure chemical, as well as the chemical when mixed with other substances, either intentionally or inadvertently. It will also identify the reactive properties of the chemical when mixed with air, water or other possible reactants. Also included in the matrix should be variations in temperature, percentage and pressure of reactants.

ii. Should EPA add reactive chemicals to the list of RMP-covered chemicals in 40 CFR 68.130? If so, which chemicals? What criteria should EPA consider using to establish TQs for reactive chemicals? Should EPA add only specific chemicals, or groups of chemicals defined by particular chemical characteristics?

Listing specific chemicals considered to be reactive would not be an effective way to regulate reactive chemicals. The CSB has noted that "using lists of chemicals is an inadequate approach for regulatory coverage of reactive hazards. Improving reactive hazard management requires that both regulators and industry address the hazards from combinations of chemicals and process-specific conditions rather

[86] See http://www.csb.gov/assets/1/19/ReactiveHazardInvestigationReport.pdf, pp.89-90

than focus exclusively on the inherent properties of individual chemicals." Note that another major incident involving reactive chemicals occurred in July 2012 at the Flex 'N' Gate Guardian West facility in Urbana, IL, where a sulfuric acid release sent 11 workers to the hospital.[87]

v. *Should EPA revise the RMP regulation to use chemical functional groups similar to those in the TCPA [20] to define hazardous reactive mixtures? If so, which chemical functional groups should EPA use?*

Yes, EPA should adopt the approach towards the management of reactive hazards of the New Jersey Toxic Catastrophe Prevention Act (TCPA), which is based on the presence of certain reactive moieties in the substances in the process, as well as other factors. The Reactive Hazard Substance Mixtures (RHSM) section of TCPA covers intentional mixing of two or more chemicals that can result in a potential catastrophe. TCPA has provided a list of inherently unstable functional groups. If any of the intentional mixtures that are products, byproducts, or reactants contain functional groups listed in the table below, the operating facility is required to obtain a heat of reaction (ΔH). Threshold quantities for a known ΔH are provided by TCPA. EPA should carefully evaluate this table and modify it as appropriate for RMP.

Groups containing Carbon	
-C≡C-	Acetylenic compounds
-C≡C-M	Metal acetylides
-CN2	Diazo compounds
-C-N=O, -N-N=O	Nitroso compounds
-C-O-N=O	Acyl or alkyl nitrites
-C-O-NO2	Acyl or alkyl nitrates
MC=N→O C=N-O-M	Metal fulminates or aci-nitro salts, oximates
Groups containing Oxygen	
-O-O-M, EOO^-, MOO^-	Metal peroxides, peroxoacid salts
-O-O-E	Peroxoacids, peroxyesters
S_2O_4	Dithionites

Groups Containing Nitrogen	
F-C- $(NO_2)_2$	Fluorodinitromethyl compounds
-N-M	N-metal derivatives
-N-NO_2	N-nitro compounds
=N^+-N-NO_2	N-Azolium nitroimidates
Ar-N=N-O-R	Arenediazoates
ArN=N-S-Ar	Arenediazo aryl sulfides
Ar-N=N-O-N=N-Ar	Bis(arenediazo) oxides
-N3	Azides (acyl, halogen, non-metal, organic)
-N^+-OH Z^-	Hydroxylaminium salts
Ar-N=N-S-N=N-Ar	Bis(arenediazo) sulfides
N-O-	Compounds containing N-O bond

Abbreviations: Ar = aromatic (benzene); M = metal; R = organic chain; X = halogen; E = nonmetal; Z = anion; n = integer variable; all other abbreviations are for the element symbols from the periodic table of elements Note: (1) Not all chemical bond symbols are shown. (2) This is a partial list of the functional groups, the complete list is available in reference 2, or can be obtained from the author.

[87] http://www.news-gazette.com/news/local/2012-07-18/11-workers-sent-hospital-flex-n-gate.html

RFI C.1.f. Removing Certain Substances From the List or Raising Their Threshold Quantity

EPA asks whether it would be appropriate for EPA to delete toluene diisocyanate (mandated by Congress to be included on the initial RMP list) from the RMP toxic substances list.

EPA should not remove any of the three listings for toluene diisocyanate from the RMP list. Well more than 100 RMP facilities have reported off-site consequences analysis information for toluene 2,4-diisocyanate, toluene 2,6 diisocyanate, and toluene diisocyanate unspecified isomer. A number of these facilities report significant vulnerability zones. Delta North Channel (Houston, Texas), Delta St. Gabriel (St. Gabriel, La.), and Delta Deer Park (Deer Park, Texas) have all at various times reported worst-case scenarios involving toluene 2,6-diisocyanate that extend more than 20 miles from the facility and potentially involve millions of people. Lyondell Chemical Company (Westlake, La.) also formerly reported a vulnerability zone of 25 miles for toluene diisocyanate (unspecified isomer) that could impact any of nearly 200,000 people. EPA should provide a complete accounting of current and past RMP filings involving toluene diiscyanates.

Further, EPA's RMP*Comp tool shows the hazards of toluene diisocyanate to be temperature dependent. For toluene 2,6-diisocyanate a temperature above 77 degrees Fahrenheit markedly increases the vulnerability zone distance using RMP*Comp. For toluene 2-4-diisocyanate and toluene diisocyanate unspecified isomer a temperature above 122 degrees Fahrenheit greatly increases the vulnerability zone distance using RMP*Comp.

Toluene diisocyanate is also a respiratory sensitizer. Toluene diisocyanate produces irritation of the respiratory tract. Concentration-dependent effects occur, often after a delay of 4 to 8 hours and may persist for 3 to 7 days. High-concentration inhalation can lead to chest tightness, cough, breathlessness, and inflammation of the bronchi with sputum production and wheezing. Accumulation of fluid in the lungs can also occur. Previously exposed persons may develop inflammation of the lungs when re-exposed to extremely low levels of toluene diisocyanate. Flu-like symptoms such as fever, malaise, shortness of breath, and cough can develop 4 to 6 hours after exposure and persist for 12 hours or longer. Chest x-rays may indicate lung changes. In sensitized individuals, asthmatic attacks can occur after exposure to extremely low toluene diisocyanate air concentrations (0.0001 ppm). Asthmatic reactions can be immediate, delayed (4 to 8 hours), or both. Exposure to toluene diisocyanate can lead to Reactive Airway Dysfunction Syndrome (RADS), a chemically- or irritant-induced type of asthma. Children may be more vulnerable because of relatively increased minute ventilation per kg and failure to evacuate an area promptly when exposed.

Rather than delisting toluene diisocyanate, EPA should review additional chemicals for sensitization potential and propose listing or adjusting thresholds for chemicals with that problematic property.

EPA asks if it is not appropriate to delete TDI, would it be appropriate for EPA to continue to list TDI on the RMP list but with a higher TQ for RMP reporting? Currently, the TQ for all three TDI listings is 10,000 pounds.

A cursory overview of RMP reports for the three listings for toluene diisocyanate suggests that only a very small portion of facilities that report TDI would be affected by changing the TQ from 10,000 pounds to 20,000 pounds. EPA should provide a complete accounting of RMP filings for TDI, including the number and proportion that would be affected by changing the TDI TQ.

Is there any reason that EPA should not delete 1,3-pentadiene from the RMP list as it does not meet the listing criteria for flammable substances and was erroneously listed?

EPA should not delete 1,3-pentadiene from the list of RMP substances since including it on the list provides useful information about potentially serious releases. For example, StanTrans, Inc., Texas City, TX, reported in its 2004 Risk Management Plan that a worst-case release of 12.6 million pounds of 1,3-pentadiene could affect an area within 1.84 miles of the facility in which 8,000 people live (RMP ID 1000-0004-9574). Eastman Chemical Company - Jefferson Site (Jefferson Borough, PA) reported in its 2009 RMP that 1,3-pentadiene could impact 3,100 people within 1.60 miles of the facility (RMP ID 1000-0010-9811). And Cray Valley Wallisville Road (Houston, TX) has also reported a worst-case scenario with potential off-site impacts involving 1,3-pentadiene (RMP ID 1000-0015-1998). EPA should provide a complete accounting of current and past RMP filings involving 1,3-pentadiene.

RFI C.2 Additional Risk Management Program Elements
EPA requests information on the questions related to Additional Risk Management Program Elements

b. *Would expanding the scope of the RMP regulation to require additional management-system elements, or expanding the scope of existing RMP management-system elements, improve the protection of human health and the environment? Should EPA require safety culture assessments, job safety analyses, or any of the other new management system elements described above?*

Because management system elements have evolved over time since the process safety management (PSM) standard was written, there are new management systems that must be addressed. We recommend the following:

Explicitly include as a requirement of the RMP standard the basic management system principle of continual improvement. This principle is at the core of all management system standards, including ISO quality and environmental management system standards, as well as health and safety management system standards by AIHA/ANSI in the U.S., the International Labor Organizations (ILO), and the British Standards Institute (BSI).

Include in the revised RMP an explicit requirement defining the roles and accountabilities of upper management in a health and safety management system (i.e., Board of Directors, owners of private businesses, etc.), as is the case in the United Kingdom, which has a "best practice" that applies to upper management roles and accountabilities in a management system,[88] and as articulated in the "Vision 2020" developed by the American Institute of Chemical Engineers through the Center for Chemical Process Safety.[89] The Sarbanes–Oxley Act of 2002,[90] enacted July 30, 2002, set new or enhanced standards for all U.S. public companies, boards, management and public accounting firms, including enterprise-wide risk management responsibilities. Ensure that under Section 404, the management and the external auditor report on the adequacy of the company's internal control on financial reporting includes cost accounting for assessing and implementing safer alternatives and the consequences of their failure to do so.

EPA should establish requirements to collect and publicly report normalized and standardized process safety performance indicators that would be reported by regulated parties and made publicly available by EPA for the site, corporate and national levels. Indicators are an indispensable element for any effective health and safety management system. As the saying goes, "if you don't measure it, you can't manage it." While much attention has been given to the difference between "leading" and "lagging" indicators, we believe that the full range of this spectrum of indicators must be utilized, and that an excessive emphasis on the distinction between them can detract attention from the essential characteristics of effective indicators, as follows:

a. Their primary goal and attribute must be their ability to continually drive improvements in safety performance. Indicators can drive improvements at the site, corporate, industry sector or national levels. Indicators will also help to target enforcement efforts to the worst hazards and worst violators, as well as permit the evaluation of the effectiveness of the regulatory and industry efforts to control chemical hazards.

b. They must be predictive of the potential for serious incidents, so they can drive improved performance. Whether they are "leading" or "lagging" will depend on the time frame envisioned for the preventive actions. For example, a process failure leading to an unplanned release that is in turn controlled by a properly functioning flare is nominally a "lagging" indicator, because the unwanted event (the release) has already occurred. It is also a "leading" indicator, however, in a longer and different time frame, in the sense that correcting the conditions that caused the unplanned flare event can prevent a future system disruption and potentially a more serious event. A similar argument applies to any loss of containment or fire, even if they do not result in human injury or property damage.

[88] http://www.hse.gov.uk/pubns/indg417.pdf
[89] https://www.aiche.org/sites/default/files/docs/pages/vision2020.pdf
[90] http://www.gpo.gov/fdsys/pkg/PLAW-107publ204/html/PLAW-107publ204.htm

c. They must be frequent enough to possess sufficient statistical ability to be as quantitatively predictive as possible. For this purpose, indicators cannot rely on counts of major incidents alone (i.e., explosions, large fires, fatalities and serious injuries), because these events are too infrequent at the establishment and often even at the company level to yield large enough numbers for meaningful statistical analysis, and thus permit preventive actions likely to have widespread impact, rather than largely "one-off" improvements.

d. They must be based primarily on going outside the boundaries of: 1) any of the multiple layers of protection that are part of the hazard control mechanisms for high hazard chemicals, or, 2) the systems that monitor and maintain these layers in proper operating order. These multiple layers nearly always exist to protect against the complex chain of events that typically lead to serious incidents. To take the example above, any unwanted flaring incident reflects a process upset or failure, and should be "counted" as an indicator event, even if the release is adequately controlled by a flare system and does not progress to a serious contaminant release. Another example would be the detection of thinning in piping in excess of predicted behavior under maintenance-monitoring protocols, even if the thinning has not yet resulted in a leak. The thinning should be recorded and "counted" as a significant indicator event because it can be preventive of a major future pipe failure, as well as indicative of a shortcoming in the monitoring protocol (i.e., too infrequent or otherwise inadequate). Arguably, this is a "more lagging" indicator than the earlier example. Other and even "more lagging" indicators can and should also be employed, such as maintenance and safety requests made and completed (or not) on time, corrective actions taken or not taken, number and rate of "out of range" measures of process conditions or controls, and many others, depending on the nature of the hazardous processes and the layers of control. Again, a similar argument would apply to any unplanned loss of containment or fire, even if these events are "controlled" before human injury or property loss. In a nutshell, the indicators must be linked causally to actual or potential harmful outcomes, so that they have predictive power, and they must be frequent enough to be useful for statistically meaningful analysis.

e. The Agency, in collaboration with industry and labor should agree upon one basic set of standardized indicators to be used by all regulated parties, to permit the collection of meaningful national statistical data and benchmarking. This core set of indicators must not exclude the use of other and more specific indicators by individual industry sectors, companies or establishments.

f. They must be reported at the site and company levels to upper management, including Boards of Directors and owners/shareholders, to the workforce, and to the public, to permit benchmarking and encourage improvement. While the primary function of indicators is to drive continual improvement in performance; public reporting is a key tool to incentivize and help ensure that such improvements take place.

e. Would expansion of the RMP employee provision to include requirements such as the SEMS II stop-work authority, or other efforts to involve employees in all management-system elements, enhance protection of human health and the environment?

We strongly support expansion of the RMP standard's employee participation provisions to involve employees and their representatives in all management system elements. We believe this would prevent worker injuries and fatalities because employees have first-hand experience of the jobs they do and the processes they operate and have valuable knowledge to contribute about potential hazards. The Occupational Safety and Health Administration (OSHA) should explore the inclusion of SEMS II stop-work authority with strong provisions written into the standard to prevent retaliation against employees exercising that authority.

The RMP program should require and ensure that:

- Employers develop, implement and maintain a written plan to ensure employee participation in RMP planning, analysis, and implementation. The plan shall include provisions that provide for the following:
    - Consultation by the employer with employees and their representatives on the development, implementation and maintenance of all elements of Process Safety Management required by this Section;
    - Access by employees and their representatives to all information developed by the employer pursuant to this Section, including information that might be subject to protection as a trade secret.
- All employees who serve on any committee or in an advisory capacity related to RMP and facility safety are selected by employees or employee representatives.
- Employers develop, implement and maintain an effective Stop Work Authority and Hazard Reporting Program that ensures at a minimum:
    - The right of all employees, including employees of contractors, to refuse work based on safety or health concerns and anonymously report hazards;
    - The right of all employees, including employees of contractors, to recommend to the operator in charge of a unit that an operation or process be stopped or shut down based on safety or health concerns; and
    - The authority of the operator in charge of a unit to stop or shut down an operation or process based on safety or health concerns.

As mentioned earlier, EPA should consider establishment of anonymous reporting of safety problems similar to the Federal Aviation Administration's Aviation Safety Action

Program.[91] The ASAP system encourages the reporting of safety-related events anonymously in the aviation industry, even when they may involve mistakes on the part of the reporting employee. EPA and the Working Group should strive to test a similar model in one or more high-hazard industry sectors.

In addition, requiring that operating procedures (including maintenance procedures, Management of Change procedures and changes and updates to procedures resulting from Management of Change) be written in the language or languages understood by the affected employees, as well as in English, would benefit both safety and worker participation.

EPA should add a required element to the RMP standard to address human factors such as fatigue, worker-machine interactions (ergonomic design) and other factors that can optimize the protection of human health and safety as well as overall system performance. The Center for Chemical Process Safety's Human Factors Methods for Improving Performance in the Process Industries can provide a framework for this requirement.[92] We urge EPA to make sure that this new RMP element does not degenerate into a "blame the victim" method as expressed in many so-called "behavioral safety" programs.

RFI C.3. Define and Require Evaluation of Updates to Applicable Recognized and Generally Accepted Good Engineering Practices

Employers should be required to use recognized and generally accepted good engineering practices (RAGAGEP) in the design, operation, maintenance and management of all chemical processes covered by this regulation. In order to comply with recognized and generally accepted good engineering practices, it may be necessary for an employer to consult sources of information not specifically listed in the standard, including consensus codes, recommended practices and guidelines. One source most applicable to chemical processes is the Guideline books prepared by the Center for Chemical Process Safety of the American Institute of Chemical Engineers. Other suggested amendments to the standard also clarify compliance with recognized and generally accepted good engineering practices.

A fundamental principle of effective management systems and performance-oriented approaches to regulation is the need to continually improve performance, and this can only be done if regulated facilities employ recognized and up-to-date best practices for all elements of the required management system. For that reason, it is necessary to require that the RAGAGEPs that underpin all elements of the standard be updated periodically. Best practices evolve with experience, and thus RAGAGEPs must not remain static. The standard should also be revised to require that employers continually keep abreast of developments in the RAGAGEPs that are the basis of their process

[91] http://www.faa.gov/about/initiatives/asap/

[92] Center for Chemical Process Safety, Daniel Crowl (editor), Human Factors Methods for Improving Performance in the Process Industries. 2007. John Wiley and Sons, Hoboken, NJ.

safety information and their process hazard analyses, by following developments in the consensus standard(s) and other activities from which their RAGAGEPs arise.

RFI C.4. Extend Mechanical Integrity Requirements to Cover Any Safety-Critical Equipment

c. Would expanding the scope of § 68.73 to explicitly cover the integrity of all equipment critical to process safety make it more likely to prevent accidental releases?

Yes. We favor expanding the scope of § 68.73 explicitly to cover the mechanical integrity of all equipment the employer identifies as critical to process safety. We believe it would prevent worker injuries and fatalities.

RFI C.5. Require Owners and Operators to Manage Organizational Changes

c. Would clarifying § 68.75 with an explicit requirement that employers manage organizational changes prevent accidental releases? What would be the economic impact of such a clarification? Are there any special circumstances involving small entities that EPA should consider with respect to this option?

Yes. We favor amending the Management of Change provisions in the Standard to include changes in personnel and deviation from established procedure. The standard as currently written does not adequately address issues of providing training and continuity of information in cases of changes of personnel and deviation from established procedure. Changes in personnel may result from mergers, layoffs, retirement and expansion, and when these changes occur it is crucial that the transfer of responsibility is done in a way that gives the employees knowledge of and information about their new responsibilities. Not only is it crucial for them to be given notice of a transfer of responsibility, but these employees must have the resources, time and ability to perform their new jobs. Amendments must be made to the standard to make it clear that any transfer of responsibility due to personnel changes must be accompanied by notice, training and adequate resources. When an established or standard operating procedure cannot be followed and alternate methods must be used to complete a task, a Management of Change must be completed to be sure the alternate methods do not present new and/or additional hazards.

RFI C.6. Require Third-Party Compliance Audits

c. Would revising § 68.58 and § 68.79 to require owners and operators of RMP-regulated facilities to use a third-party for compliance audits help prevent accidental releases?

EPA asks a series of questions about whether to require third-party compliance audits, whether such audits would increase protection of human health and the environment, and whether EPA should make other changes to strengthen audit requirements.

Third-party audits could help prevent chemical releases if a number of safeguards ensure the integrity of the audits and the audit process, including:

- Accreditation of Third Party Auditors – Federal Agencies should qualify and accredit through notice and comment independent commercial third parties that assist chemical sources in the preparation and submission of chemical safety assessments and plans.

- Qualification Standards – EPA should establish standards as to the qualifications of third party auditors. Such standards must address the qualifications of the third party to provide expertise in design engineering and prevention through design, as well as training, documentation, employee participation, and other factors.

- Conflicts of Interest - Standards established by EPA should disqualify any third party that has a financial interest other than the provision of the certification (e.g., a vendor of another product or service to the company) or other conflict of interest, and should require change of third party every few years. Essentially, EPA should prohibit auditors from having other relationships with the same employer. For example the employer should be prohibited from hiring auditors who have previously been consultants or contractors because they would be in the position of evaluating the work they had previously done for the employer. The auditor should be prohibited from being a consultant or contractor to the employer after the audit because this could provide an incentive to find hazards that the employer would have to pay them to fix.

- Employee Participation – Employees and their representatives should have the right to participate in third party audits, including mechanisms for choosing representation on audit teams, ensuring balanced representation, selecting auditors, joining inspections, disputing findings, obtaining response to written comments, and authenticating corrective actions.

- Employee Representatives – Where the workplace has an authorized employee representative, EPA should require that the auditor be chosen from among accredited auditors by mutual agreement between the employer and the employee representative. Per the OSHA Salman letter[93], if employees in a workplace without a collective bargaining agreement choose to designate a representative, the employer should be required to reach mutual agreement with that representative when selecting the auditor. In addition, EPA should require that the audit team leader be an employee, representative, or agent of the auditing organization, and have no affiliation with the employer and that, where there is an employee representative, the employer and the employee representative should each choose the same number of members of the audit team. Where there is no employee representative the members of the audit team who are not provided by the third party auditor should be divided equally between

[93] http://edworkforce.house.gov/uploadedfiles/09-18-13_dol_ltr_osha_walk_arounds.pdf

salaried and hourly employees. Union members should have the right to accompany the auditor during on-site inspection of the facility.

- Dispute and Written Response Procedure – EPA should provide a mechanism for employees and their representatives, where present, to dispute findings of the auditor if they have good reason to believe that an area of the audit was incomplete or imbalanced. One such mechanism would be to require the auditor to provide a written response to employee challenges to audit findings (or lack of findings) as a condition of maintaining certification and in certain cases to return to a facility to re-examine hazards that employees have alleged were overlooked.

- Automatic Revocation of Accreditation – Where EPA discovers, by investigating a catastrophic event or by some other means, that an auditor failed to identify a crucial hazard, the auditor should lose its accreditation until it can demonstrate that the problems that led to the failure have been corrected.

- Completeness and Documentation – Any third party certified assessment or plan submitted to EPA must include all elements ordinarily contained in assessments and plans that do not receive third party certification.

- Equivalent Treatment – EPA should receive and treat third party audited assessments and plans in the same manner as assessments and plans that did not receive third party audits.

- Governmental Review – EPA should routinely review a sufficient number of completed third party audits to ensure their adequacy and completeness as well as the effectiveness of third party audit program standards.

New Jersey's Toxic Catastrophe Prevention Act (TCPA) provides a useful reference for some of these elements, namely:

- Selection of consultants/third parties;
- Conflicts of interest; and
- The consultant's/third party's required expertise.

Here are relevant portions from the TCPA regulations:

Selection of consultants

(a) The Department shall authorize an independent consultant nominated by the owner or operator to perform the Extraordinarily Hazardous Substance Accident Risk Assessment. The independent consultant shall be chosen by the Department and hired and paid for by the owner or operator in accordance with the provisions of this subchapter.

(b) Within 60 days after receipt of the finished work plan, an owner or operator shall submit the names and proposals of three consultants who meet the requirements of N.J.A.C. 7:31-9.4(b) and are willing and able to perform the EHSARA in accordance with the schedule set in the work plan.

(c) The owner or operator shall not submit the name and proposal of any consultant who:

1. Is owned or controlled by the owner or operator or by a firm which owns or controls both the owner or operator and the consultant or owns or controls the owner or operator;

2. Was the designer of any covered process at the stationary source;

3. Is debarred or suspended pursuant to N.J.A.C. 7:1-5 or on the New Jersey Department of Treasury's list of firms debarred or suspended from engaging in work in the State;

4. Fails to state in its written proposal that it will not subcontract any of the work involved in the EHSARA unless provided in writing by the Department; or

5. Fails to state in its written proposal that it will not change the staff named to do any of the work involved in the EHSARA unless approved in writing by the Department.

Proposal requirements

(a) Each proposal shall explain in a clear and concise manner how the consultant is going to address each task in the owner or operator's work plan.

(b) Each proposal shall demonstrate the consultant's ability to perform the EHSARA set forth in N.J.A.C. 7:31-9 and shall include:

1. The consultant's qualifications in:
   i. Process engineering;
   ii. Safety engineering;
   iii. Preparation of operating procedures;
   iv. Preparation or review of maintenance procedures;
   v. Preparation or review of safety procedures;
   vi. Preparation or review of operator training programs;
   vii. Performance or review of accident investigations;
   viii. Performance of hazard reviews and process hazard analyses;
   ix. Performance of risk assessments;
   x. Preparation or review of emergency response plans;
   xi. Performance of audits of risk management programs; and

xii. Knowledge of risk reduction methods.

These New Jersey regulations continue with other descriptions of the work to be performed, but the portions above address consultant selection, conflicts of interest, and required expertise.

RFI C.7. Effects of OSHA PSM Coverage on RMP Applicability

EPA asks for comment on revising or eliminating RMP program level 2 if OSHA restricts its retail exemption and thereby greatly reduces the number of RMP facilities eligible for program level 2.

We have no objection to eliminating program level 2 if OSHA does restrict its retail exemption only to facilities in certain NAICS sectors selling small containers, packages, or allotments to the general public and the result is just 200 program level 2 RMP facilities. This number of facilities does not justify the added complexity and burden on all RMP facilities of determining their eligibility for program level 2. Eliminating program level 2 in these circumstances would simplify the RMP program and make the program's application more uniform across the country, in particular for water and wastewater facilities that are subject to OSHA PSM in some states with state-delegated OSHA programs but not in other states where federal OSHA does not cover state and municipal government employees typical of water and wastewater plants. Eliminating program level 2 would also tend to better harmonize RMP and OSHA PSM, including management of change, pre-startup review, employee participation, hot work permits, and contractor program elements that are currently required under RMP program level 3 but not program level 2.

RFI D.4. Additional Stationary Source Location Requirements

EPA asks whether the Agency should amend the RMP program to include specific siting requirements as part of the PHA by establishing buffer or setback zone requirements for new covered stationary sources or by establishing safety criteria for siting of occupancies inside the facility.

Following the prevention hierarchy, chemical hazards that can be avoided should be avoided. But where unavoidable hazards remain, buffer zone or setback guidelines and requirements can help separate chemical hazards from vulnerable populations. A recent report by the Center for Effective Government shows that one-third of America's schools are located within at least one vulnerability zone of some 3,400 priority chemical facilities. It will be very difficult at best for RMP facilities to fully protect public receptors from hazards of this magnitude short of using safer alternatives that remove or avoid catastrophic hazards.

Nonetheless, sub-populations such as workers, fenceline communities, and sensitive facilities can be better protected by setback requirements. EPA should comprehensively review the setback requirements of other Agencies, dispersion models, and chemical

facility incidents for instructive lessons about distances at which consequences can occur. As noted, many workers harmed at the BP Texas City incident were in trailers sited too close to the failed chemical process. The West, TX fertilizer explosion severely damaged schools, an elder care facility, and residences all located well within a predictable blast zone. At Murdock, IL in 1983 an exploding propane railcar traveled some three-quarters of a mile (3,640 feet) through the air into an open field. Numerous studies have documented the disproportionate location of low-income and minority communities within close proximity to hazardous chemical facilities.[94] Current industry facility location guidelines are voluntary and too often based on easily manipulated risk assessment of elements such as accident frequencies. Based on its review of actual consequences, EPA should establish enforceable siting requirements that protect workers, fenceline communities, and sensitive facilities.

RFI D.7. Worst Case Release Scenario Quantity Requirements for Processes Involving Numerous Small Vessels Stored Together

As noted earlier in our description of the April 16, 1947 ammonium nitrate explosion tragedy in Texas City, TX, worst-case release scenario quantity requirements should take into account the release of substances from multiple vessels that could be breached in the same event or series of events. A number of RMP facilities report worst-case scenarios involving as little as one pound of a substance while at the same time holding tens of thousands or even a million pounds or more of the substance. Such calculations understate the potential scope of a worst-case release. Many such facilities are warehouses or distribution centers that store large numbers of small containers (for example aerosol product storage). Numerous small containers stored together should be included in a common worst-case scenario if they could reasonably be breached by the same event, such as a fire involving flammable materials in warehouse.

RFI D.8. Public Disclosure

d. Would posting the RMP executive summary on a website cause facility owner/operators to remove important information from the executive summary? Does EPA need to better define the contents of an executive summary in order to allay security concerns?

EPA should better define the minimum contents of an RMP executive summary. However, the first part of this question (8.d), posting on a website, is not the most important. It is unlikely that each separate company posting information on its own website will result in systematically well-informed local communities or emergency responders. It is more important to include this information in a well-organized public database. Experience suggests that EPA should better define basic information to include in the executive summary because some facilities' executive summaries are almost non-existent.

[94] Who's in Danger: Race, Poverty, and Chemical Disasters, A Demographic Analysis of Chemical Disaster Vulnerability Zones, Environmental Justice and Health Alliance for Chemical Policy Reform, May 2014.

RFI D.12. Streamlining RMP Requirements

c. Should EPA require that RMP submissions be certified by a senior corporate official, such as the Chief Executive Officer, Chief Financial Officer, Chief Operations Officer, or the equivalent to ensure corporate-wide awareness and accountability in the RMP submission?

Yes.

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