



April 8, 2014

The Honorable Mathy Stanislaus
Assistant Administrator, Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N.W.
Mail Code: 5101T
Washington, DC 20460

RE: Executive Order 13650 on Improving Safety and Security of Chemical Facilities –
Assessing the New Jersey Toxic Catastrophe Prevention Act and its Inherent Safety Technology
Assessment Program

Dear Assistant Administrator Stanislaus:

On November 15, 2013, ACC's Senior Director for Security Bill Erny presented verbal testimony to the Working Group during the Washington, DC, Listening Session concerning the issues raised in Executive Order 13650. During his testimony, you asked for ACC to provide a formal opinion regarding the inherently safer technology (IST) assessment program that is currently administered by the State of New Jersey Department of Environmental Protection. The following is an assessment of that program and its potential implications if implemented on a national scale.

Background

In 1985, the State of New Jersey enacted the Toxic Catastrophe Prevention Act (TCPA), which was enacted in response to the release of methyl isocyanate from a chemical facility in Bhopal, India, in 1984. As New Jersey is home to dozens of chemical facilities located amongst critical infrastructure that connects the densely populated surrounding areas of New York and Philadelphia, the legislature wanted to take measures to prevent a similar accident from occurring in New Jersey. The TCPA's goal was to reduce the risk of "potentially catastrophic discharges of hazardous substances in the environment."

In addition to chemical facilities, the TCPA covers a broad range of industrial facilities including drinking water and wastewater treatment facilities, food manufacturing and handling facilities, petrochemical refineries, power generation facilities, and other chemical facilities that handle "extraordinarily hazardous substances" (EHS). This program served as the model for the federal

Risk Management Plan Rule (RMP Rule) that Congress created under the Clean Air Act amendments of 1990.

When the TCPA was enacted, it required risk reduction plans to look at potential alternative processes, procedures, and equipment that might reduce the risk of a hazardous release in hopes of preventing future hazardous environmental incidents. There was no explicit mention of “inherently safer” designs, technologies, or processes. The TCPA program rules were revised in 2003, and the changes explicitly mentioned and defined inherently safer technologies (IST) as “the principles or techniques incorporated in a *newly designed and constructed* covered process to minimize or eliminate the potential for an extraordinary hazardous substances accident.” At that time, the New Jersey Department of Environmental Protection (NJDEP) stated that “every IST technique will not be suitable for every process and will rely on the owner or operator’s evaluation of which techniques, if any, will be appropriate for a particular newly design or constructed process.”

On November 21, 2005, the New Jersey Domestic Security Preparedness Task Force established a new “Best Practices Standards” program, requiring chemical facilities to conduct IST reviews, among other things. In 2008, the TCPA program was expanded to require all TCPA facilities to conduct IST reviews on both new and existing processes that contain a listed EHS meeting or exceeding the regulatory threshold.¹ As a result of this action, all TCPA facilities were required to submit IST feasibility reports to the NJDEP by September 2, 2008.

This change meant that the scope of facilities covered by the IST rules went beyond those covered under the “Best Practices Standards” program by applying to existing processes as well as new ones. As a result, all TCPA facilities were required to perform and document a comprehensive IST analysis, evaluate all possible IST alternatives, determine their technical and economic feasibility for implementation, and submit a report of their findings to the NJDEP every five years in conjunction with their Occupational Safety and Health Administration (OSHA) process hazard analysis.

While the NJDEP cannot mandate the implementation of IST alternatives, they can issue a formal written opinion about a facility’s report, including whether they agree with the feasibility conclusions. When conducting its review, however, the NJDEP is not required to follow the same level of scientific and technical rigor as the regulated community, nor is it required to justify or substantiate its opinion using any recognized standard. Additionally, the NJDEP is not required to demonstrate whether or how a particular alternative would reduce risk to the plant, to the surrounding community, or across the chemical supply chain, and the NJDEP is not required to perform any sort of cost impact or benefit analysis.

Results from the NJ IST Program

¹40 N.J.R. 2254(a), May 5, 2008.

In April 2012, a representative of the NJDEP delivered a presentation based on a study performed by the State of New Jersey.² The presentation focused on the initial lot of 85 IST feasibility reports submitted under the TCPA IST program. It was reported that 45 facility reports out of the 85 total (53 percent) indicated they had implemented or scheduled to implement IST measures as a result of their review. Facilities were categorized into six sectors: chemical manufacturing, petroleum refining, food processing, power generation, water or wastewater treatment, and other industrial sectors. Table 1, below, provides a summary of the IST measures implemented or scheduled by industry sector.

Table 1 - Summary of IST Implementation by Industry Sector

Industry Sector	Number of Facilities in Sector	Number of IST Measures implemented	Percent of Facilities Implementing IST	Average Number of IST Measures Implemented per Facility
Chemical Mfg.	39	113	51.3	5.7
Petroleum Refining	4	6	50.0	3.0
Food Processing	14	59	85.7	4.9
Power Generation	6	1	16.7	1.0
Water and Wastewater	13	16	53.8	2.3
Other	9	10	33.3	3.3
Total	85	205	52.9	4.6

The 205 IST measures reported were tabulated by category of IST strategy employed. The IST strategy categories were defined as: (1) substitution, (2) minimization, (3) moderation, (4) simplification, (5) location/siting/transportation, and (6) other.

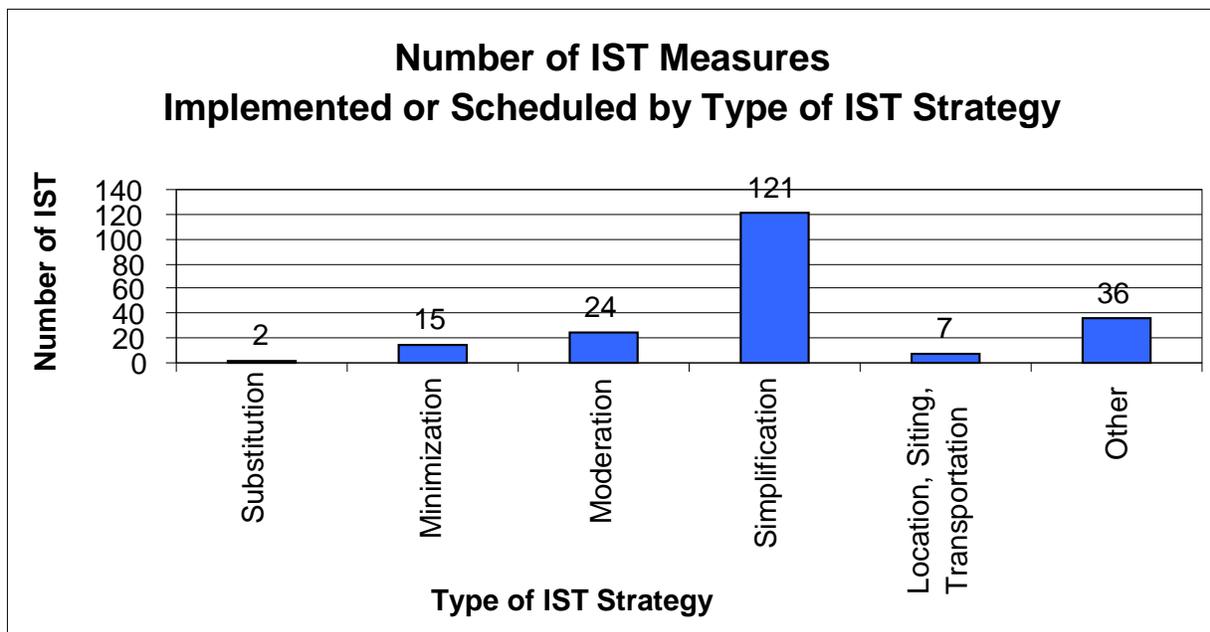
Incorporating inherent safety into a chemical manufacturing process is generally considered to be most effective when employed during the new process plant design phase and incorporated as an integral part of the process or final end product. IST becomes increasingly more difficult and, in many cases, prohibitive when dealing with existing processes that are not easily changed without

² Iclal Atay and Paul Komosinsky, "Inherently Safer Technology Implementation—Risk Reduction and Risk Shifting," *Process Safety Progress* 32, no. 1 (November 28, 2012): 12-16.
<http://onlinelibrary.wiley.com/doi/10.1002/prs.11547/pdf>.

fundamentally altering the process or plant design. Therefore, the NJDEP was concerned that the potential IST implementation options would be significantly limited under the TCPA for existing facilities. As a result, the State of New Jersey created their own definition of IST for New Jersey regulatory purposes, as opposed to using the widely recognized definition developed by the Center for Chemical Process Safety (CCPS). The NJDEP stretched the definition of IST to include passive, active, and procedural controls as well as to the fundamentals of chemical processing. In the NJDEP’s effort to broaden the IST application under the TCPA, it included routine safety improvements that are considered and implemented on a regular schedule by chemical facilities as required by internal maintenance programs and existing federal regulations, such as OSHA’s Process Safety Management of Highly Hazardous Chemicals (PSM) standard. The NJDEP incorrectly defined inherent safety to allow “add-on” safety equipment that is not part of the inherent safety concept as defined by CCPS and others.

As a result, of the 205 IST measures implemented under the New Jersey TCPA program, the vast majority were reported under the “simplification” strategy, which New Jersey believed did not necessarily result in elimination of an inherent hazard, but rather made a hazard less intense or less likely to occur by reducing the opportunity for operator error. Table 2, below, provides a breakdown of the number of IST measures by type of IST strategy. As shown in the table, 121 ISTs (nearly 60 percent) were reported under the simplification strategy.

Table 2 - Number of IST Measures Implemented or Scheduled by Type of IST Strategy



When looking more in-depth at the types of IST implemented under the “simplification strategy,” the measures included a variety of routine safety upgrades, such as installing new computer systems, adding remote shutoff valves and alarms, and adding leak detectors and

process instrumentation to monitor operating conditions—none of which truly make the process “inherently” safer. Other changes reported included the upgrading of construction materials, minimizing connections and flanges in process equipment and piping, upgrading to blowout resistant gaskets, increasing wall strength of piping and equipment, and reducing pipe seams and joints to minimize the number of potential release points.

While such safety enhancements are useful and do contribute to managing safety risk (rather than risk elimination or reduction, which are the defining goals of IST) at a chemical facility, they do not make the process “inherently” safer. Such safety upgrades are conducted on a regular basis when new technology and software become available and when they contribute to reducing process hazards. Moreover, these types of enhancements are currently required under the OSHA PSM standard under the process hazard analysis review every five years. No “IST consideration” mandate is needed to encourage facilities to consider these types of changes, as they are identified routinely under other regulatory and voluntary programs.

Concerns

Under Executive Order 13650, the U.S. Environmental Protection Agency (EPA) is considering a proposal put forth by certain groups to “nationalize” the New Jersey IST program through its authority under section 112 (r) of the Clean Air Act and its Risk Management Plan Rule (RMP Rule). Currently the RMP-regulated community includes more than 12,000 large and small businesses, including family owned and operated establishments such as bakeries, food storage and processing facilities, distribution warehouses, and dry cleaners. Based on our analysis of the New Jersey IST program, it is difficult to see how nationalizing this program would provide any significant new risk reduction benefit, especially when compared to the enormous burden it would place on facility owners and the economy. It is unclear how federal regulators would be able to absorb and administer such a complex program without a significant increase in resources and additional budget. In fact, EPA itself has long held that IST requirements are not worth pursuing since it would not produce additional benefits beyond those that already exist in the current RMP Rule structure.

IST is a complex concept. As described in the Center for Chemical Process Safety and the American Institute of Chemical Engineers final report regarding the definition of IST, “safer” only has a meaning when placed in the proper and full context.³ Various factors such as risk shifting, unintended consequences, feasibility, and economic impact must also be a part of a holistic risk assessment approach. No one regulatory program or government agency can adequately address the broad range of factors that must be considered when choosing an effective risk management strategy, a point that is very important when one considers all of the

³ Center for Chemical Process Safety and the American Institute of Chemical Engineers, *Final Report: Definition for Inherently Safer Technology in Production, Transportation, Storage, and Use* (July 2010) 1-54. https://www.aiche.org/sites/default/files/docs/embedded-pdf/ist_final_definition_report.pdf

various site-specific scenarios for the approximately 12,000 facilities that could be impacted by an IST requirement under the RMP Rule.

Furthermore, the TPCA program does not specifically require reporting risks before and after the implementation of IST to fully and accurately measure the effectiveness of such changes. “Risk” is never defined or quantified at a baseline level. The scope and focus of the risk posed are not defined. Therefore, there is no specific accounting for risk shifted upstream, off-site, or anywhere along the supply chain. There is no specific way to quantify “risk” or to determine what a reduction in “risk” would look like. There is no way to qualitatively determine if the program truly has resulted in any real risk elimination across the board. In light of existing federal and industry programs, it is difficult to envision the benefit of adopting this program at the federal level or how doing so would meet the objectives of this Executive Order or even Executive Order 13563 concerning Improving Regulation and Regulatory Review.

In addition, trying to incorporate the New Jersey approach into the federal RMP program presents its own set of unique challenges, since the program is focused singularly on reducing the risk of accidental releases of hazardous chemicals into the air. Accordingly, any IST consideration mandate would need to have the goal of reducing that specific risk as its focus. There are numerous existing regulatory programs, however, that focus attention of owners and operators on other aspects of operating a safe and secure facility. OSHA’s PSM standard, the U. S. Department of Transportation’s (DOT) hazardous materials regulations under the Pipeline and Hazardous Materials Safety Administration (PHMSA), and the U.S. Department of Homeland Security’s Chemical Facility Anti-Terrorism Standards (CFATS) already require facilities to address the risk of accidental releases in the workplace, the safe transportation of hazardous materials, and terrorism risks. All of these programs as they exist today require operators to take a detailed look at the facility operations and to do what it takes to make the operations safe and secure. If an IST consideration mandate is required under the RMP Rule, it is difficult to envision how the analysis would account for the myriad of other regulatory requirements not under EPA’s jurisdiction.

Conclusions

Inherently safer approaches to chemical manufacturing processes have been and will continue to be considered by businesses as a matter of course. However, it is the business owners and operators who are in the best position to understand the full ramifications of implementing IST, not regulators. Owners or operators need to take a holistic approach when addressing risk at their facilities; these various regulatory programs and requirements in place today need to be addressed in concert so that the overall safety and security profile – for employees, environment, and community – can be maintained at the highest level possible while allowing the facility to function. No one regulatory agency has the legal authority to perform this task, nor is any one regulatory agency even capable of performing this task.

ACC believes the current performance-based regulations in place today and the marketplace itself provide strong incentives for companies to consider and adopt IST. These programs allow facility operators to use all of the risk management tools and options at their disposal, while considering the complexities of their unique operating environment. Enacting new, additional regulations that focus on IST is not only unwarranted but potentially harmful by overemphasizing one specific safety measure over other, potentially more appropriate safety techniques. There is no one method to measure the effectiveness of a specific technology in the context of IST and, therefore, no objective approach to create prescriptive rules that could be widely applicable to the complex and various processes used at chemical facilities.

Furthermore, pursuing options related specifically to IST would ultimately jeopardize the success of Executive Order 13650 by distracting attention away from much needed policy improvements and threatening to create unnecessary and duplicative regulatory requirements that would not contribute to enhancing safety and security.

Sincerely,

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