Center for American Progress

Safer Chemicals Create a More Secure America

We Can Diminish the Security Threat from Chemical Plants

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The Department of Homeland Security and numerous security experts warn that terrorists could use industrial chemicals as improvised weapons of mass destruction. But chemical facilities can often remove the danger of a catastrophic chemical release and make themselves less attractive targets for terrorists by using safer and more secure chemicals or processes. Such alternatives invest in American workplaces and communities—and are already used in many industries.

Research shows that hundreds of chemical facilities are switching to safer, more secure chemical processes, while eliminating dangers to millions of people. Cost-effective alternatives are already in use at bleach producers, water utilities, power plants, oil refineries, aluminum smelters, and many manufacturers, among other industries. But many other facilities have not yet adopted available alternatives.

Yet the Interim Chemical Facility Anti-Terrorism Standards, which expire October 4, 2010, address site security without developing ways to remove unnecessary terror targets. Physical site security, however worthy, cannot assure protection, address supply chain risk, or modernize facilities. The temporary standards exempt thousands of water utilities and ports from security requirements, exclude knowledgeable employees from security planning, lack basic accountability for government enforcement, and even bar DHS from requiring any specific security measure.

The Chemical and Water Security Act, H.R. 2868, now under consideration in the Senate Homeland Security and Governmental Affairs Committee, as well as the Senate Environment and Public Works Committee, establishes a permanent comprehensive program that would require high-hazard chemical plants to review methods to reduce the consequences of a terrorist attack. It would require the very highest hazard facilities to implement such techniques where cost effective, technically feasible, and risk reducing. And also it would provide limited funding for facilities that upgrade to safer, more secure technologies.

These measures would help secure our nation's chemical facilities and keep Americans safer. And in fact, reports from the Center for American Progress show that many companies already use intrinsically more secure technologies that remove the danger of a major toxic gas release.

The following options remove catastrophic toxic gas release dangers to employees and communities and are *already in use* in the United States.

Companies typically adopt an alternate chemical or process, use a chemical in a less dangerous or less concentrated form, or generate a chemical only as needed without storage. Other options include colocating chemical suppliers with users, improving inventory control, or minimizing bulk storage. These changes remove unnecessary dangers and avoid certain costs related to regulatory compliance, liability insurance, personal protective equipment, community notification, site security, and emergency planning.

- Bleach manufacturers eliminate bulk chlorine gas by generating chlorine on-site as needed without storage.
- Petroleum refineries eliminate hydrofluoric acid alkylation by using less hazardous sulfuric acid or by 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 onsite or 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, such as for fuel additives, water treatment chemicals, and aramid polymers used to make bulletproof vests.

These existing practices show what is possible for companies and the federal government as they work to eliminate the homeland security risks of using, manufacturing, and transporting dangerous chemicals.