

Bibliography and Quotations

Amnesty International:

Clouds of Injustice: Bhopal Disaster 20 Years On

November 29, 2004

<http://www.amnesty.org/en/library/asset/ASA20/015/2004/en/dom-ASA200152004en.html>

"Ensuring public participation and transparency in decisions relating to the location, operational safety and waste disposal of industries using hazardous materials and technology is an essential step to heighten risk awareness and responsible behavior as well as to ensure better preparedness to prevent and deal with disasters like Bhopal."

p.6

In the Bhopal disaster "At least half a million people had been exposed to the toxic fumes."

p.10

Argonne National Laboratory

A National Risk Assessment for Selected Hazardous Materials Transportation

December 2000

<http://projects.battelle.org/trbhazmat/Presentations/TRB2001-002217.doc>

"...Releases of toxic chemicals can kill and injure people located relatively far from the accident...As a result, failure to identify and evaluate opportunities to reduce the risks from these types of relatively rare accidents could ultimately lead to thousands of fatalities, injuries, and evacuations."

Association of American Railroads

February 27, 2008

"It's time for the big chemical companies to do their part to help protect America. They should stop manufacturing dangerous chemicals when safer substitutes are available. And if they won't do it, Congress should do it for them in the Chemical Facility Anti-Terrorism Act of 2008."

The Brookings Institute:

Protecting the American Homeland; A Preliminary Analysis

2003

<http://www.brookings.edu/press/Books/2003/protectingtheamericanhomelandoneyearon.aspx>

Brookings estimate that a "successful attack on [a]... chemical plant [could result in] 10,000 fatalities." This estimate is modest.

p.6

"Prevention must be the highest priority (since it stops all attacks, large and small)."

p.8

"In most cases, government intervention should take the form of mandates on the private sector rather than through direct subsidies or tax incentives."

p.10

"...Preventive measures are likely to be particularly effective because they tend to reduce overall levels of risk, rather than just shifting it from one target to another."
p.35-6

"Shipping by rail poses certain concerns... Chlorine, for example, a toxic chemical that can enhance the combustion of other substances, is often stored and shipped in 90-ton rail tank cars. A release of 90 tons of chlorine could affect populations up to 14 miles away"
p.46

"Security at many chemical facilities has not been sufficient, as demonstrated even before September 11 by environmentalists from Greenpeace."
p.47

Center for American Progress:

Chemical Security 101

November 2008

http://www.americanprogress.org/issues/2008/11/chemical_security.html

"The only certain way to protect our communities is to remove the possibility of a toxic gas release by converting facilities to safer, more secure alternative technologies. This report identifies opportunities for conversions at the 101 most dangerous facilities, each of which threaten roughly 1 million people or more in surrounding areas. The chemicals most often posing the greatest danger at the top 101 facilities are chlorine—almost always in railcars—followed by hydrofluoric acid and sulfur chemicals.
p.1

"One insurance study found that a major chlorine rail spill in an urban area could cause 10,200 fatalities and over \$7 billion in damages."
p.6

Toxic Trains and the Terrorist Threat

April 2, 2007

http://www.americanprogress.org/issues/2007/04/chemical_security_report.html

"Cost was a frequently cited reason for not converting. But the survey found such conversions are affordable even at large facilities, costing no more than \$1.50 per person served each year-- or the price of a bag of potato chips."
p.2

"Put another way, a single day's expenditures on the war in Iraq could cover construction costs of converting the remaining U.S. water utilities off chlorine gas railcars."
p.2

"A comprehensive solution can only come from the federal level. In fact, judges in the ongoing litigation over rerouting in Washington, D.C., have encouraged the Bush administration to develop a national strategy to address the security and safety dangers involved in the manufacture, use, and transportation of chlorine gas and other hazardous chemicals."
p.2

"A RAND Corp. database of worldwide terrorist incidents recorded over 250 attacks against rail targets from 1995 to 2005. Insurgents in Iraq have recently targeted trucks carrying chlorine gas with several deliberate attacks."
p.5

"Some facilities, however, identified important savings in preventative maintenance, emergency planning, employee training, regulatory compliance, future site security, and other factors."
p.10

"After all, there is little reason to believe that current security practices would be able to withstand a well-executed attack by an armed intruder. Nor does enhanced physical security do anything to protect railcars in transit to the facility."
p.10

"...Recently enacted interim chemical security legislation exempts water utilities, neglects transportation hazards, and ignores safer technologies. Millions of Americans remain unnecessarily at risk from a catastrophic chemical release."
p.14

"To address this threat, Congress, the administration, and industry must make chemical security an urgent national priority, with the goal of transitioning to safer, more secure technologies."
p.14

Preventing Toxic Terrorism: How Some Chemical Facilities are Removing Danger to American Communities

April 2006

http://www.crtk.org/library_files/ChemicalSurvey.pdf

Of the 238 chemical facilities that have already transitioned to safer chemicals or technologies, "of respondents that provided cost estimates, roughly half reported spending less than \$100,000 to switch to safer alternatives and few spend over \$1 million."
p.3

"Facilities cut a variety of costs and regulatory burdens by switching to less hazardous chemicals or processes. These facilities need fewer physical security and safety measures and can better focus on producing valuable products and services"
p.3

"Unfortunately, more than four years after the 9/11 terrorist attacks, the White House and Congress have failed to act. Currently, no federal law or regulation requires hazardous chemical facilities to review or use readily available alternatives. "
p.4

"Many chemical facilities have already taken this step thereby protecting millions of Americans. Millions more could be taken out of harm's way within a concerted national effort to convert other high-risk facilities to safer chemicals and processes."
p.4

"Numerous federal agencies and other observers have warned that terrorists could turn hazardous chemical facilities into improvised weapons of mass destruction. These agencies include the Department of Homeland Security, Department of Justice, Government Accountability Office, Environmental Protection Agency, Agency for Toxic Substances and Disease Registry, Army Surgeon General, and Naval Research Laboratory, among others."
p.6

"Some 284 respondents in 47 states reported they had switched to less acutely hazardous chemicals or processes or moved to safer locations. As a result, more than 38 million Americans no longer live under the threat of a harmful toxic gas release from these facilities."
p.7

"...Approximately 1,150 wastewater facilities and 1,700 drinking water plants remain in the RMP program for extremely hazardous chemicals, primarily chlorine gas."
p.10

"Ultraviolet light and other options such as ozone are more effective than chlorine against certain biological agents such as anthrax that could contaminate drinking water."
p.11

"Some 18 manufacturing facilities reported process changes that reduced the danger of an off-site gas release...These manufactures represent diverse industries and made an array of changes... Notably, the majority of these facilities reported neutral costs or anticipated cost savings from their changes."
p.12

"A catastrophic chemical release at just one of the nation's most dangerous facilities could kill, injure or sicken tens of thousands. Adopting less acutely hazardous chemicals or processes is the only *certain* way to protect the public from a toxic gas cloud."
p.20

"Many facilities achieved significant safety and security improvements... Nonetheless, many other facilities that could make similar improvements remain potential terrorist targets. Accordingly, the chemical industry and government should make conversion of high-hazard facilities to safer available technologies a national strategic priority."
p.20

Charles River Associates

"Assessment of the Economic Benefits of Chlor-Alkali Chemicals to the United States and Canadian Economies"

April 1993

<http://yosemite.epa.gov/ee/epalib/eelib.nsf/73bc8d7fb6d3644385256a290076d16f/56978f7c30046d3852566b70051f917!OpenDocument>

"...Any situation where chlorine-dependent processes or chlorine-containing compounds create unacceptable health and environmental risks should be corrected."
p.1

"At some cost, alternatives exist for *all* uses of chlorine and chlorine-derived compounds."
p.5

Chemical and Engineering News

"Simply Safer," by Jeff Johnson

February 3, 2003

<http://pubs.acs.org/cen/government/8105/8105gov1.html>

"Coined 'inherently safer design' by British chemical engineer Trevor Kletz in the late 1970s, the concept seems simple: It is better to design processes that eliminate chemical plant hazards at the beginning than to engineer 'add-on' technologies later to try to control them."
p.1/9

“Kletz, who is retired after 38 years with ICI [Imperial Chemical Industries], puts it like this, ‘The very best way to prevent an explosion is to simply replace the material that explodes with one that does not or at least keep the stock down so low that it hardly matters if it all leaks out.’”

p.1/9

The concept was seized upon during the terrorism debate as a hazard reduction solution with safety benefits...”

p.1/9

“In the end, the result [of ISTs] could be a new world of smaller and highly efficient chemical plants.”

p. 4/9

“[Trevor] Kletz, [Dennis C.] Hendershot, and others with long time chemical industry experience say industry, academia, and government should do much more to encourage the spread of what may ultimately be the safest, cheapest way to make chemicals.”

p. 4-5/9

“‘In many companies, the gut reaction to an accident is to reroute procedures,’ he [Kletz] says. ‘They are starting at the wrong end of the hierarchy.’”

p. 9/9

“‘There are far, far more opportunities for inherently safer designs than we are making use of today,’” Kletz adds.”

p. 9/9

The Chlorine Institute:

Estimating the Area Affected by a Chlorine Release—Pamphlet 74

February 2006

<http://www.chlorineinstitute.org/Bookstore/ProductDetail.cfm?ItemNumber=2303>

"90-Ton Rail Tank Car

- Total mass release = 180,000 pounds
- 10 minute release
- 300 pounds/second steady rate release
- Release occurs on concrete surface
- Maximum downwind distance to 3ppm = 41.5 miles
- Maximum crosswind distance to 3ppm = 2.3 miles
- Maximum downwind distance to 20ppm = 14.8 miles
- Maximum crosswind distance to 20ppm = 1.9 miles" “Even a 150 lb cylinder could be catastrophic for over 1.5 miles.”

p.20

“Even a 150 lb cylinder could be catastrophic for over 1.5 miles”

p.20

Recommended Practices for Handling Chlorine Tank Cars—Pamphlet 66

December 4, 2007

<http://www.chlorineinstitute.org/Bookstore/ProductDetail.cfm?ItemNumber=2247>

"Tank cars for chlorine use are permitted by regulation to have a maximum capacity of 90 tons (81648 kg) of chlorine. Chlorine tank cars have 55, 85 or 90 ton capacities. Tanks may not be loaded with chlorine in excess of the load limit stenciled on the side of the car."

p.8

"The weight of chlorine must not exceed 90 tons... Gross rail load must not exceed 263,000 pounds."

p.21

Congressional Budget Office:

Homeland Security and the Private Sector

December 2004

<https://www.cbo.gov/doc.cfm?index=6042>

"The security of the chemical industry--which includes oil and gas production, processing, and transportation--was a concern before September 11, but after that date, the increased national threat... amplified the expected losses...that many people already deemed vulnerable...."

p.21

"...September 11 indicated that the scope of potential attacks is now larger."

p.21

"EPA reported in 2000 that nearly 15,000 facilities were handling at least one hazardous substance in a quantity greater than threshold limits..., a subset of a much larger number of businesses handling a 'significant' quantity."

p.22

"Much of the overall government effort for chemical safety occurs at the state and local level and is oriented toward emergency preparedness. The federal effort (as of Dec. 2004) includes worker-safety, environmental, and information programs that are intended to support local activities."

p.27

The CBO recommends: "Better informing the public on where dangerous chemicals are, either by regulation or through public/private partnerships to disseminate information."

p.27

Congressional Research Service

Chemical Facility Security

August 2, 2006

<http://www.fas.org/sqp/crs/homesecc/RL31530.pdf>

"Facilities handling large amounts of potentially hazardous chemicals (i.e., chemical facilities) might be of interest to terrorists... [and] the risks may be increasing—with potentially severe consequences for human health and the environment. Available evidence indicates that many chemical facilities may lack adequate safeguards."

Summary Page (first page)

"Congress might enact legislation to reduce risks, either by 'hardening' defenses against terrorists... or by requiring industries to consider use of safer chemicals, procedures, or processes."

Summary Page (first page)

Council on Foreign Relations

America the Vulnerable: How Our Government is Failing to Protect Us from Terrorism

Stephen Flynn, Senior Fellow in National Security Studies

2004

<http://www.foreignaffairs.org/20020101faessay6557/stephen-e-flynn/america-the-vulnerable.html>

"Congress should reconsider Senator Corzine's proposed provision to end the use of some especially deadly chemicals at plants near high population areas."

p.121

CRO Corporate Responsibility Office

"Complex Chemistry"

by Abby Schultz

June/July 2007

<http://www.thecro.com/node/510>

"Heather Langsner, Director of Research at Innovest Strategic Value Advisors... says Dow is right to develop green chemistries, which she notes Dow's competitors have been doing. However, Langsner is concerned with Dow's reliance on chlorine based products, such as polyvinyl chloride (PVC)."

p.20

"Observers of the company question whether Dow will ever overcome its legacy as a maker of Dursban and Agent Orange, as well as the legacy it inherited when it bought Union Carbide Corp. in 2001 On Dec. 3, 1984 a leak of methyl isocyanate (MIC) from an agricultural pesticide plant in Bhopal, India—a company in which Union Carbide held just more than half the stock—killed several thousand people. It is estimated that another 15,000 to 20,000 more people have died of complications since then, and the region is still contaminated 23 years later."

p.18

Dupont Chairman Charles Holliday

Security tops DuPont chief's concerns

News Journal Washington Bureau

By Nicole Gaudiano

June 26, 2007 and July 25, 2007

<http://seclists.org/isn/2007/Jun/0120.html>

In a presentation on industry risks, Mr. Holliday told the National Press Club: "I feel very comfortable that we've taken all the reasonable steps, but obviously if someone wants to fly an airplane into a plant, it's very hard to guard against it."

Falkenrath, Richard, Deputy Homeland Security Adviser to President Bush

Statement before US Senate Committee on Homeland Security and Governmental Affairs,

January 26, 2005

http://www.brookings.edu/testimony/2005/0126defense_falkenrath.aspx

"Of all the various remaining civilian vulnerabilities in America today, one stands alone as uniquely deadly, pervasive and susceptible to terrorist attack: toxic- inhalation-hazard industrial chemicals."

Federal Register

December 28, 2006

Proposed Rules

"The key difference is that they may involve effects that are more severe than expected with accidental risk."

Vol. 71, No. 249, p.78317

The Guardian

"Chemical Infrastructure Security: Good News and Bad News"

By P. J. Crowley

2006

<http://www.infragardconferences.com/theguardian/ChemicalInfra.html>

"But the security dilemma is that... facilities that manufacture or use the most hazardous chemicals... are not moving fast enough to adopt safer alternatives that have been proven to be effective and economical."

p.4

"Entities that use specific chemicals should be required to study inherently safer technology or other alternatives. This analysis should be conducted annually and made available to the public and investors through annual reports or corporate filings with the Securities and Exchange Commission."

p.8

International Joint Commission:

Seventh Biennial Report

February 7, 1997

<http://www.ijc.org/php/publications/html/7bre.html>

"Recommendations:

....7) the Parties, in consultation with industry and other affected interests, develop timetables to sunset the use of chlorine and chlorine-containing compounds as industrial feedstocks and that the means of reducing or eliminating other uses be examined."

p.54

Sixth Biennial Report

February 10, 1997

<http://www.ijc.org/php/publications/html/6bre.html>

"...In many cases, alternative production processes do exist... We know that when chlorine is used as a feedstock in a manufacturing process, one cannot necessarily predict or control which chlorinated organics will result, and in what quantity. Accordingly, the Commission concludes that the use of chlorine and its compounds should be avoided in the manufacturing process. We recognize that socio-economic and other consequences of banning the use of chlorine--and subsequent use of alternative chemicals or processes--must be considered in determining the timetable."

p.29

"The Commission also recognizes that certain other uses of chlorine are of special concern because of the overwhelming public health benefits from their use. Disinfection of drinking water and sewage (as well as production of certain pharmaceuticals) are uses for which public health has been protected and for which, it is claimed, there are limited or no alternatives. Yet, there is evidence that chlorinated organics are created in water treatment processes and that, in other parts of the world, alternative processes have long been in use. Again, the issue seems to be cost rather than technology."

p.29-30

K2 Pure Solutions

2007-2009

<http://www.k2pure.com/>

"Utilizing our new, Inherently Safe Technology (IST), K2 Pure produces exceptionally pure, high-quality bleach with nothing but water, inert salt and electricity in a vertically integrated process that eliminates the need to transport chlorine."

Ketchum/Clorox

"Crisis Management Plan for the Clorox Company"

1991

<http://www.sourcewatch.org/index.php?title=Clorox>

"Defining a 'crisis' is less important than knowing one when you see one."

p.33

National Research Council:

Terrorism and the Chemical Infrastructure; Protecting People and Reducing Vulnerabilities

2006

http://www.nap.edu/catalog.php?record_id=11597

"According to a 2004 U.S. Fire Administration survey, fewer than 16 percent of fire departments in this country have hazmat units."

p.53

National Journal

"Security Leak"

August 2, 2003

by Margaret Kriz

"These chemical plants have a vulnerability which has a catastrophic characteristic... that could approximate the World Trade Center,' Rand Beers, a White House counter-terrorism adviser for 30 years, told *National Journal*."

p.2477

"EPA initially said that one of the things facilities ought to at least look at as part of a comprehensive vulnerability assessment is whether there are steps they can take to reduce hazards that are present at the site,' recalls a former EPA official."

p.2478

“Chemical companies make dangerous things,’ added Greg Lebedev, president of the American Chemistry Council, which represents 180 giants of the chemical manufacturing industry. ‘Getting into the technology of what you make and how you make it is a subject for an environmental or technology context, not security. I don’t want us to wander down an exotic path here.’”
p.2479

“Corzine describes that defeat and industry’s continuing effort to water down his bill as ‘a classic case of the special interest trumping the public interest.’”
p.2480

“But the battle continues over Corzine’s desire to encourage industry to use inherently safer technology at the chemical facilities.”
p.2480

“The problem you have in an open society is that it’s physically impossible to make any large industrial site terrorist-proof,’ Barton said in an interview. ‘If there are enough terrorists who are dedicated enough and equipped well enough, they’re going to overwhelm everything that you put up short of some sort of Fort Knox—which doesn’t make much sense, given the cost and the relatively remote possibility that any specific site is going to be targeted.’”
p.2481

National Security Advisor to the President

Richard Clarke *UPI*
August 31, 2005

“Clarke criticized the administration and the Republican-controlled Congress for not giving priority to pushing through legislation yet. ‘Congress has diddled for three years on a Chemical Security Act.’”

New Jersey Work Environment Council

Safety and Security First: Protecting Our Jobs, Families, and Hometowns from Toxic Chemical Disasters
May 2006
<http://inquirer.philly.com/pdfs/2006/safety.pdf>

In the likely case of a terrorist attack, not to mention the “far more frequent and continuing ‘routine’ accidents, spills, fires, and explosions
p.16

New York City Comptroller

One Year Later: The Fiscal Impact of 9/11 On New York City
September 4, 2002
<http://www.comptroller.nyc.gov/bureaus/bud/reports/impact-9-11-year-later.pdf>

Palm Beach Post

“Hijacking Suspect Cased Targets, Experts Say Mohammed Atta Called a ‘Little Bomb Walking Around’
by Joel Engelhardt

October, 2001

<http://www.greenpeace.org/usa/assets/binaries/falkenrath-testimony>

“On October 28, 2001, Danny Whitener reported Mohammed Atta’s (terrorist involved in 9/11 attacks) interest in the status of a chemical storage facility—the Palm Beach Post: “According to Whitener the man asked ‘So tell me about this factory I just flew over,’ referring to a former copper processing plant nearby, with dozens of round steel tanks and flanked by towering smokestacks. At the time, hundreds of rail tanker cars were parked near the plant, Whitener said... ‘He was just persistent about the chemical company,’ Whitener said. ‘I told him the tanks were empty. He came back and said ‘Don’t tell me that. What about all the... [rail] tanker cars?’”

Paper, Allied-Industrial, Chemical and Energy Workers International Union (PACE):

PACE International Union Survey: Workplace Incident Prevention and Response Since 9/11

October 2004

<http://www.google.com/search?hl=en&client=firefox-a&rls=org.mozilla%3Aen-US%3Aofficial&hs=8f7&q=PACE+International+Union+Survey%3A+Workplace+Incident+Prevention+and+Response+Since+9%2F11+PACE&btnG=Search>

“PACE-represented industries... [namely] chemical manufacturing... facilities may be targets. The communities surrounding these facilities are also at-risk.”

p.ii

Of PACE workers surveyed at 133 high-risk chemical facilities...

“Less than half (44%) of the respondents indicated that their company’s preventative actions, including security efforts, were effective (...*very effective, moderately effective, ...[or] slightly effective*) in reducing the vulnerabilities of their site to a catastrophic event caused by a **terrorist attack**. Over one-third (36%) were *neutral* about the effectiveness, and one-fifth (21%) said the actions were ineffective.”

p.v

“When considering responding to an event caused by a **terrorist attack**, 44% of respondents who characterized their sites as *high* risk found their company’s actions ineffective.”

p.vi

“A strong majority of respondents reported no action had been initiated by the companies at their sites to involve the local union or hourly workers in company plans or actions to *prevent* or *respond* to a catastrophic event caused by a possible **terrorist attack**.... Involvement of the community regarding company plans or actions was even lower.

p.vi

“It is especially sobering for those who work at or live near refineries... chemical plants.

“On February 12, [2003, the DHS sounded] another alert... warning of possible ‘conventional attacks against the U.S. nuclear/chemical-industrial infrastructure... Based on information, ...industrial chemical plants remain viable targets.”

p.3

“This adds up to nearly 4,000 sites and tens of millions of people at risk.

p.4

Pittsburgh Tribune-Review

“Chemicals pose risks nationwide”

June 11, 2002

By Carl Prine

http://www.pittsburghlive.com/x/pittsburghtrib/news/specialreports/potentialfordisaster/s_69664.html

“A month-long probe by the Pittsburgh Tribune-Review into chemical plant security in Baltimore, Chicago and Houston found safeguards so lax that a potential terrorist can easily reach massive tanks of toxins that endanger millions of residents.”

Risk Management Solutions, Inc.

http://www.rms.com/NewsPress/PR_042904_CasualtyStudy.asp

“The 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.”

p.56

“Explosions, transportation accidents, and chemical releases all pose a threat to people living, working, or traveling in the vicinity of the accident.”

p.54

“Chlorine is one of many industrial agents that are harmful, yet used extensively in processing and transported in bulk. Chlorine gas is so deadly that it was used as a chemical weapon in the trenches of World War I.”

p.56

Securities Exchange Commission

by, The Clorox Company

10-Q

2008

<http://yahoo.brand.edgar-online.com/displayfilinginfo.aspx?FilingID=6223624-834-99429&type=sect&dcn=0001206774-08-001762>

"Important factors that could affect performance and cause results to differ materially from management's expectations are described in the sections entitled "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in the Company's Annual Report on Form 10-K for the year ended June 30, 2008, as updated from time to time in the Company's SEC filings. These factors include, but are not limited to.... supply disruptions or any future supply constraints that may affect key commodities or product inputs; risks inherent in sole-supplier relationships; ...**risks related to the handling and/or transportation of hazardous substances, including but not limited to chlorine**; risks inherent in litigation; the Company's ability to maintain its business reputation and the reputation of its brands.... and the ability of the Company to successfully manage product liability, ...environmental and other legal matters, including the risk resulting from joint and several liability for environmental contingencies."

p.22

"The Company anticipates the Supply Chain restructuring will be completed in fiscal year 2012."

p.7

10-K

2008

<http://yahoo.brand.edgar-online.com/displayfilinginfo.aspx?FilingID=6111322-822-119073&type=sect&dcn=0001193125-08-180293>

"...Security at certain of our facilities is regulated by the Department of Homeland Security."
p.14

"The Company must comply with various environmental laws and regulations... including... the use and disposal of hazardous substances."
p.15

"The Company also handles and/or transports hazardous substances, including but not limited to chlorine, at its plant sites, including the rail transit of liquid chlorine from its point of origin to the Company's manufacturing facilities. A release of such chemicals, whether in transit or at our facilities, due to accident or an intentional act, could result in substantial liability. The Company has incurred, and will continue to incur, significant capital and operating expenditures and other costs in complying with environmental laws and regulations and in providing physical security for its worldwide operations, and such expenditures reduce the cash flow available to the Company for other purposes."
p.15

Teamsters Rail Conference:

High Alert: Workers Warn of Security Gaps on Nation's Railroads

September 2005

<http://www.ble.org/pr/news/newsflash.asp?id=4185>

"Engineers report that there's no distress code or signal... to alert authorities of a crisis, even as they pass through or work in rail yards close to schools, government buildings and densely populated areas."
p1

"In short, workers say, America's rail lines appear one step shy of disaster."
p1

"As Americans debate and examine the nation's post-9/11 security... serious questions regarding the safety and security of the U.S. rail system remain unanswered and serious flaws go uncorrected--leaving the American public vulnerable."
p1

"...Hazardous materials, says the Department of Transportation, are potentially weapons of mass destruction, and as such, are likely targets for terrorism."
p1

"Fatigue was the focus of the NTSB investigation into the deadly June 28, 2004 train crash in Macdona... in which three people including a train conductor, died from a chlorine gas release."
p.6

"More than half the workers surveyed who saw running, unattended locomotives... said the trains were hauling hazardous materials--deadly agents like chlorine that, if released, could kill people as far as 15 miles away, according to the pamphlet 'Estimating the Area Affected by a Chlorine Release,' issued by the Chlorine Institute."
p.8

"The FBI's words were chilling: al Qaeda cells could be targeting trains carrying hazardous

materials. The Bureau had captured al Qaeda photographs of railroad engines, cars and crossings, and officials said that terrorists could choose a number of strategies, 'such as destroying key rail bridges and sections of track to cause derailments or targeting hazardous material containers.'"

p.15

"Weapons of mass destruction, the workers knew, had become part of their daily lives."

p.16

"Nearly 85% of the world's chlorine... is shipped by rail, according to the International Labour Organization (ILO)."

p.16

"By the time the green, gaseous cloud had passed over Graniteville on January 6, 2005, nine people were dead... Thousands of people were evacuated from their homes. Hundreds were injured. The full extent of environmental damage is still unknown."

p.16-17

"...Since 9/11, the nation's rail carriers have, by virtually all accounts, failed to provide significant, measurable safety and security improvements to deter or respond to a terrorist attack on the U.S. rail network."

p.18

"Restrict remote control use to non-hazmat shipments."

p.18

U.S. Army

Draft Medical NBC Hazard Analysis of Chemical-Biological-Radiological-Nuclear-High Explosive Threat, Possible Scenarios & Planning Requirements

By, **Army Office of the Surgeon General**

October 2006

http://www.fas.org/irp/doddir/dod/jp3_41.pdf

As summarized by the Washington Post (<http://www.washingtonpost.com/ac2/wp-dyn/A10616-2002Mar11>):

"A previously undisclosed study by the Army surgeon general concludes that as many as 2.4 million people could be killed or injured in a terrorist attack against a U.S. toxic chemical plant in a densely populated area."

U.S. Chemical Safety and Hazard Investigation Board

CSB Board Member John Bresland

February 28, 2007

http://www.chemsafety.gov/index.cfm?folder=news_releases&page=news&NEWS_ID=343

"Chlorine is a highly toxic substance that needs appropriate safeguards to prevent releases and protect the public, facility personnel, and emergency responders."

U.S. Environmental Protection Agency

Lessons Learned in the Aftermath of September 11, 2001

February 1, 2002

“General authority exists under the Safe Drinking Water Act (SDWA)/Clean Water Act (CWA) to perform vulnerability assessments, but EPA has only limited Authority to require corrective actions.”

p.2-1

“Two specific incidents where security was a specific concern were identified: (1) railroads did not want to ship chlorine in tankers after attacks, but chlorine is needed to guarantee the safety of water supplies, and (2) EPA received requests to reroute chemical tankers and trucks away from the population centers.”

p.D-14

Chemical Accident Risks in U.S. Industry

By James C. Belke

September 25, 2000

<http://www.epa.gov/ceppo/pubs/stockholmpaper.pdf>

“A chemical plant could effectively be converted into a weapon of mass destruction (WMD) relatively easily.”

p.5

“Toxic chemicals... particularly ammonia and chlorine... account for the majority of RMP processes.”

(with table)

p.13

“The median [negatively impacted] population for... toxic worst case scenarios is 1500 people.”

p.25

“The high number of facilities in both class intervals is primarily due to the prevalent use of 90-ton rail tank cars for chlorine storage in the United States.”

p.26

Letter from William H. Sanders III, Dr., P.H., P.E., Director, Office of Pollution Prevention and Toxics, to Rick Hind, Legislative Director of Greenpeace USA

“All chemical companies have a fundamental responsibility and a general duty to design, operate, and maintain a safe plant, prevent accidents, and to mitigate the consequences of those releases that do occur under section 112(r) of the Clean Air Act Amendments of 1990.”

President Clinton's Clean Water Initiative

February 1994

“...The Administration will develop a national strategy for substituting, reducing, or prohibiting the use of chlorine and chlorinated compounds:

Within 6 months following enactment, the Administrator should convene a task force... to comprehensively assess the use, environmental and health impacts of chlorine and chlorinated compounds, and availability and relative efficacy and safety of substitutes for these substances as used in... solvents, PVC and other plastics...”

p.22

U.S. Government Accountability Office

Protection of Chemical and Water Infrastructure

March 2005

<http://www.gao.gov/new.items/d05327.pdf>

"In March, 2003, we recommended that Secretary of Homeland Security and the Administrator of EPA jointly develop, in consultation with the Office of Homeland Security a comprehensive national chemical security strategy to include... legislative proposal to require chemical facilities to expeditiously assess their vulnerabilities... and... require these facilities to take corrective action."
p.6

"The nation's drinking water systems are not required to implement any risk reduction actions based on their vulnerability assessments."
p.7

"The majority of officials at the community water systems we visited reported that the federal government should provide technical support and guidance to help the water sector in developing and implementing security enhancements."
p.7

"The majority of officials we interviewed also supported the need for the federal government to expand financial support for the security enhancements in the water sector by providing funding designated for community water systems."
p.7

"According to a 1999 study by the Agency for Toxic Substances and Disease Registry (ATSDR), security at chemical plants in two communities was fair to poor." – *General Accounting Office (GAO-03-439)*, March 2003

Homeland Security: DHS Is Taking Steps to Enhance Security at Chemical Facilities but Additional Authority Is Needed

January 27, 2006

<http://www.gao.gov/products/GAO-06-150>

"...Industry officials told us that they face a number of challenges in preparing facilities against a terrorist attack. They reported that the cost of security improvements can be a burden, particularly for smaller companies that may lack the resources larger chemical companies have to devote to security."
p.6

"Because chemical facilities pose significant risks to millions of Americans, additional legislation is needed to give DHS the authority to require security improvements at these facilities."
p.6

"...Stakeholders had mixed views, however, on the specific contents of any legislation, such as requirements that facilities substitute safer chemicals and processes--referred to as "inherently safer technologies"--that could lessen the potential consequences of an attack by reducing the risks present at these facilities, but could be costly or infeasible for some plants."
p.6

"We are also recommending that DHS... work with EPA to study the advantages and disadvantages of substituting safer chemicals and processes at some chemical facilities."
p.7

Homeland Security: Voluntary Initiatives Are Under Way at Chemical Facilities, but the Extent of Security Preparedness is Unknown

March 2003

<http://www.gao.gov/new.items/d03439.pdf>

“Chemical facilities may be attractive targets for terrorists intent on causing massive damage. The risk of an attack varies among facilities, depending upon several factors, including their location and the types of chemicals they use, store, or manufacture.”

p.3

“Many facilities are located in populated areas, where a chemical release could result in injuries or death as well as economic harm.”

p.3-4

“Furthermore, both the Secretary of Homeland Security and the Administrator of EPA have stated that voluntary efforts alone are not sufficient to assure the public of the industry’s preparedness.”

p.5

“The Army has also estimated high potential damage to the population from a toxic chemical release... The Army Office of The Surgeon General propose, based on generic estimates, that it was conceivable that as many as 2.4 million people could request medical treatment if a terrorist caused a release of a toxic chemical.”

p.11

“ACC’s security code generally requires that third parties... verify that [stated] improvements were implemented. The code does not require, however, that third parties verify that the vulnerability assessment is conducted appropriately or that the actions taken by the facility adequately address security risks.”

p.26

“While industry recognizes the contribution that inherently safer technologies can make to reducing the risk of a terrorist attack, industry officials noted that decisions about inherently safer technologies require thorough analysis.”

p.29

“Chemical facilities may be attractive targets for terrorists intent on causing economic harm and loss of life. Many facilities exist in populated areas where a chemical release could threaten thousands. EPA reports that 123 chemical facilities located throughout the nation have toxic ‘worst-case’ scenarios where more than a million people in the surrounding area could be at risk of exposure to a cloud of toxic gas if a release **occurred.**”

U.S. Homeland Security Council:

Planning Scenarios: *Executive Summaries*

Scenario 8: Chemical Attack—Chlorine Tank Explosion

Copyright valid through 2009

<http://www.globalsecurity.org/security/ops/hsc-scen-8.htm>

“Assuming a high-density area, as many as 700,000 people may be in the actual downwind area, which could extend as far as 25 miles. Of these, 5% (35,000) will receive potentially lethal exposures... An additional 15% (105,000 people) will require hospitalization... However, approximately 450,000 “worried well” will seek treatment at local medical facilities.... Most of the injured will recover in 7 to 14 days, except for those with severe lung damage. These individuals will require long-term monitoring and treatment.”

Section 8, p.2

“There will be significant damage to the plant as a direct result of the attack. Decontamination of waterways may present a significant challenge as well. Environmental impacts especially public safety concerns, are likely to significantly delay rebuilding efforts.

Section p.8-3

Casualties	17,500 fatalities; 10,000 sever injuries; 100,000 hospitalizations
Infrastructure Damage	In immediate explosions areas, and metal corrosion in areas of heavy exposure
Evacuations/Displaced Persons	Up to 70,000 (self evacuate)
Contamination	Primarily at explosion site, and if waterways are impacted
Economic Impact	Millions of dollars
Potential for Multiple Events	Yes
Recovery Timeline	Weeks

Section 8, p.1

U.S. Justice Department: Federal Bureau of Investigation

Troy Morgan FBI Agent and expert on weapons of mass destruction
June 2003

“You’ve heard about sarin and other chemical weapons in the news. But it’s far easier to attack a rail car full of toxic industrial chemicals than it is to compromise the security of a military base and obtain these materials.”

U.S. Nuclear Regulatory Commission

Edward McGaffigan, Commissioner
November 2001

“There is no chemical regulatory commission that looks at the petrochemical plants and has requirements for security that are inspected by chemical regulatory agency staff, and there are no on-force exercises, and none of the apparatus that we have in place is in place for much of the rest of the infrastructure. It is quite clear that you can get catastrophic consequences in industries other than the nuclear industry...”

U.S. Naval Research Laboratory

Dr. Jay Boris, Testimony before the Committee on Public Works and the Environment of the Council of the District of Columbia

January 23, 2004

<http://www.greenpeace.org/usa/assets/binaries/analysis-by-us-naval-research>

"Terrorist attacks in an urban environment can put 100,000 people or more at risk in a 15 to 30-minute time span...lethally exposed people can die at the rate of 100 per second."

U.S. Public Interest Group Education Fund

Protecting Our Hometowns; Preventing Chemical Terrorism in America

2002

http://www.environmentillinois.org/uploads/vX/q5/vXq5bctEDIM08AzFaZHlxg/Protecting_our_Hometowns.pdf

"The threat of terrorism require eliminating or reducing hazards through the use of inherently safer technologies wherever feasible."

p.1

"The use of airplanes on September 11th and the use of truck bombs in previous attacks show that terrorists need not penetrate a site's perimeter to cause destruction, and security alone is inadequate to prevent a terrorist attack."

p.5

"While some attention has focused on the potential for terrorists to use chemicals to build chemical weapons, national security experts have asserted that the enormous complexity of creating a chemical weapon makes such a scenario less likely than an intentionally triggered chemical release from an industrial facility. Industrial facilities provide relatively easy access to chemicals at locations from which a significant chemical release could harm large numbers of people. Amy Smithson, director of the Chemical and Biological Weapons Non-Proliferation Project at the Henry L. Stimson Center, testified in a House of Representatives committee hearing:

'Although assembling from scratch an unconventional weapons capability that could cause mass casualties is not that elementary, there are tangible routes whereby terrorists could inflict considerable harm with chemical and biological substances. One shortcut involves foul play with industrial chemicals.... Logic dictates that if the same result [mass casualties from a chemical release] can be achieved through a less arduous route, terrorists intent on causing mass casualties with chemicals would probably engineer the intentional release of industrial chemicals rather than wrestle with the complexities of making large quantities of the classic chemical warfare agents.'

p.6

U.S. Senator (former), Garry Hart, D-CO

Washington Post, op-ed

August 11, 2003

<http://www.washingtonpost.com/ac2/wp-dyn/A42185-2003Aug10?language=printer>

"As hard as it is to believe, the chemical industry has refused to take adequate precautions to safeguard its facilities and surrounding communities. Some plants have strengthened on-site security by adding guards, building fences or installing surveillance cameras. Others have

committed to reducing or phasing out their use of highly hazardous processes or chemicals in favor of safer ones. Unfortunately, however, it is still business as usual at most plants. They continue to deal with high volumes of dangerous chemicals -- even when safer materials or processes are readily available. That is why the government must require industry cooperation in homeland security."

U.S. Senator (former) Barack Obama, D-IL

Senate Floor Statement

March 30, 2006

http://frwebgate.access.gpo.gov/cgi-bin/getpage.cgi?position=all&page=S2611&dbname=2006_record

"These plants are basically stationary weapons of mass destruction."
pS2612, CONGRESSIONAL RECORD—SENATE, *March 30, 2006*

"While plant owners would not be able to substitute their own security standards, they would be able to come up with security plans that are tailored to each facility."
pS2612, CONGRESSIONAL RECORD—SENATE, *March 30, 2006*

"The Lautenberg-Obama bill also protects state and local rights to establish security standards that match their local needs."
pS2612, CONGRESSIONAL RECORD—SENATE, *March 30, 2006*

"The legislation also gives employees a seat at the table..."
pS2612, CONGRESSIONAL RECORD—SENATE, *March 30, 2006*

"But there are other ways to reduce risk that need to be part of the equation. Specifically, by employing safer technologies, we can reduce the attractiveness of chemical plants as a target. This concept, known as Inherently Safer Technology, involves methods such as changing the flow of chemical processes to avoid dangerous chemical byproducts, reducing the pressures or temperatures of chemical reactions to minimize the risk of explosions, reducing inventories of dangerous chemicals and replacing dangerous chemicals with benign ones. Each of these methods reduces the danger that chemical plants pose to our communities and make them less appealing targets for terrorists."
pS2612, CONGRESSIONAL RECORD—SENATE, *March 30, 2006*

"Even the chemical industry itself has embraced IST, and many facilities across the country have already employed safer technologies."
pS2612, CONGRESSIONAL RECORD—SENATE, *March 30, 2006*

"So far, because the industry wields so much influence in Washington, it's been getting its way."
pS2612, CONGRESSIONAL RECORD—SENATE, *March 30, 2006*

"We cannot allow our security to be hijacked by corporate interests."
pS2612, CONGRESSIONAL RECORD—SENATE, *March 30, 2006*

Statement at Senate Environment and Public Works Committee hearing

June 21, 2006

"For instance, we've heard that IST is in "the early stages of development," even though it's been used in the chemical industry for nearly 30 years. Saying IST is in its infancy is a little like saying the personal computer is in its infancy."

"We've heard that IST is an environmental issue, not a security one, even though the Departments of Justice and Homeland Security, and even the American Chemistry Council have embraced IST as part of chemical plant security in the past. And most recently, a National Academy of Sciences study, commissioned by DHS, endorsed the adoption of IST as "the most desirable solution to preventing chemical releases" from terrorist attack. Time and again, experts have agreed that IST is the most effective approach to eliminating terrorist threats at chemical facilities."

"...But there is one thing we can all agree on: any chemical plant security legislation must be comprehensive and rational. It should balance the need to keep us safe with the need to continue producing chemical products that are essential to our economy. I believe the IST approach needs to be a part of rational comprehensive security legislation."

U.S. Senator (former), Warren Rudman, R-NH

CBS 60 Minutes

November 16, 2003

<http://www.cbsnews.com/stories/2003/11/13/60minutes/main583528.shtml>

"You know, the threat is just staring us in the face. I mean, all you'd have to do is to have a major chemical facility in a major metropolitan area go up and there'd be hell to pay politically," says Rudman. "People will say, 'Well, didn't we know that this existed?' Of course, we knew."

Washington Post

Study Assesses Risk of Attack on Chemical Plant

By Eric Pianin

March 12, 2002

<http://www.highbeam.com/doc/1P2-326046.html>

"A previously undisclosed study by the Army surgeon general concludes that as many as 2.4 million people could be killed or injured in a terrorist attack against a U.S. toxic chemical plant in a densely populated area."

Toxic Chemicals' Security Worries Officials

By Eric Pianin

November 12, 2001

<http://www.mapcruzin.com/news/rtk111201a.htm>

"No one needed to convince us that we could be-and indeed would be-a target at some future date," said Frederick L. Webber, president of the American Chemistry Council, an industry group representing 180 major companies including Dupont, Dow, and BP Chemical."

Working Group on Community Right-to-Know:

Unnecessary Dangers: Emergency Chemical Release Hazards at Power Plants

July 2004

http://www.crtk.org/library_files/PowerPlantsReport.pdf

"The data in this report also show that... just two-dozen power plants account for two-thirds of the people in danger. By using readily available safer chemicals these two-dozen plants could all but eliminate the danger to 2.4 million people."

p.3

“Some 166 power plants report using anhydrous ammonia, endangering an average of 21,506 people around each facility.”

p.3

“Forty power plants report chlorine gas as their greatest emergency release hazard, endangering an average of 4,618 nearby residents.”

p.3

“National data show frequent ammonia and chlorine spills at industrial facilities. The National Response Center received reports of... 2,200 releases involving chlorine gas. Spills reported... range from minor to very large.”

p.6

“By switching to readily available and inherently safer pollution control options these power plants could eliminate or significantly reduce dangers that accidents or acts of terrorism pose to surrounding communities.”

p.7

“Agencies that have issued such warnings include the Department of Homeland Security, Department of Justice, Environmental Protection Agency, General Accounting Office, Congressional Research Service, Agency for Toxic Substances and Disease Registry, Naval Research Laboratory, and Army Surgeon General.” ... (list continues)

p.12

“The power industry should curtail unnecessary dangers by: converting high hazard power plants in populated areas to readily available safer alternatives to anhydrous ammonia and chlorine gas.”

p.15