

TESTIMONY OF

DARIUS D. SIVIN, PhD

LEGISLATIVE REPRESENTATIVE

CWA-UAW LEGISLATIVE ALLIANCE

on the subject of

THE CHEMICAL FACILITY ANTI-TERRORISM ACT OF 2009 (H.R. 2868)

and

THE DRINKING WATER SYSTEM SECURITY ACT OF 2009 (H.R. 3258)

before the

SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT

COMMITTEE ON ENERGY AND COMMERCE

UNITED STATES HOUSE OF REPRESENTATIVES

OCTOBER 1, 2009

Chairman Markey, Ranking Member Upton and Members of the Subcommittee, thank you for the opportunity to testify today. I am Dr. Darius Sivin, a Legislative Representative for the CWA-UAW Legislative Alliance, which represents more than two million active and retired workers who are members of the Communications Workers of America (CWA) and the International Union, United Automobile, Aerospace & Agricultural Implement Workers of America (UAW). I have been serving as a legislative representative for the UAW for approximately two years. Before that, I worked in the UAW Health and Safety Department as an industrial hygienist.

The CWA-UAW Legislative Alliance appreciates the opportunity to testify before this Subcommittee on the Chemical Facility Anti-Terrorism Act of 2009 (H.R. 2868) and the Drinking Water System Security Act of 2009 (H.R. 3258). We strongly support these two important measures, and urge this Subcommittee and the entire House to give them prompt, favorable consideration.

Importance of Chemical Security

Chemical security is an issue of great concern for organized labor because our members will get hurt first and worst in the case of an attack. It is a matter of concern to the UAW and the CWA because both unions represent members at facilities potentially covered by this legislation. The UAW represents members at approximately 15 facilities that are required to file EPA risk management plans are therefore potentially covered by H.R. 2868 or H.R. 3258. These include a wastewater facility in Detroit and a chemical manufacturer in Adrian, MI, both of which use chlorine gas by the rail car. Many of our members live and work in the vulnerability zone of the Detroit wastewater facility, which includes over 2 million people. We have additional members in the vulnerability zone of the Adrian facility, which includes 350,000 people. The CWA represents water treatment facilities in New Jersey and Massachusetts and its IUE division represents a number of chemical facilities that are likely to be covered by the legislation.

Our members are concerned that their workplaces and communities are not adequately protected from deadly terrorist attacks on chemical facilities and drinking water systems. The Department of Homeland Security (DHS) has identified approximately 7,000 high-risk U.S. chemical facilities and classified them into four tiers. According to a 2008 Congressional Research Service review of Environmental Protection Agency (EPA) data¹, 100 U.S. chemical plants each put 1 million or more people at risk, including the Detroit wastewater plant, where UAW members work.

Requiring Facilities to Implement Their Own Plans to Reduce the Consequences of a Terrorist Attack

The CWA-UAW Legislative Alliance believes the government should have the authority to require a facility to implement its own plans to reduce the potential consequences of a terrorist attack. The bipartisan Partnership for a Secure America (PSA), whose advisory board includes Howard Baker, Warren Rudman, Zbigniew Brzezinski and other prominent Democrats and Republicans known for their national security expertise, has called for the use of safer and more secure technologies to reduce the consequences of a terrorist attack as a national security priority. In a report entitled *Chemical Terrorism: US Policies to Reduce The Chemical Terror Threat*² (which we have submitted for the record), PSA has stated:

[I]t is essential to reduce the risk that terrorists could attack an industrial chemical facility as a means to cause the release of a plume of toxic vapor and inflict mass casualties, or to inflict economic damage by destroying a key element of the nation's critical infrastructure.

PSA also stated that "the development of inherently safer, economically beneficial, and efficient technology should be prioritized."

¹ Shea DA (2008). *Memorandum to Honorable Edward Markey Re: RMP Facilities in the United States as of February 2008*. Washington DC: Congressional Research Service.

² Kosal ME (2008). *Chemical Terrorism: US Policies to Reduce the Chemical Terror Threat*. Washington DC: Partnership for a Secure America.

Protecting Jobs

Requiring implementation of a facility's own proposed methods to reduce the potential consequences of a terrorist attack will not pose a threat to jobs. A European study of a broader category of technological changes that includes safer and more secure technologies found that these changes had no significant impact on employment³. We also have the specifically-documented case of a Schweitzer-Mauduit paper mill in New Jersey, which converted from using rail cars of chlorine gas to generating chlorine dioxide on site. No jobs were lost as a result of this conversion⁴. In contrast, jobs can be lost when disasters strike facilities, whether intentionally or unintentionally caused. On July 7, 2009 the Delco Times, a Philadelphia area newspaper, reported that 40-50 jobs will be lost because Sunoco has decided not to rebuild an ethylene unit that was damaged in an explosion that took place on May 17 of this year⁵.

The CWA-UAW Legislative Alliance believes that H.R. 2868 contains all the language necessary to protect jobs. Specifically, the bill requires the Secretary of Homeland Security to show that implementation of methods to reduce the consequences of a terrorist attack "would not significantly and demonstrably impair the ability of the owner or operator of the covered chemical facility to continue the business of the facility at its location." We believe this language is adequate to protect jobs. Adding more analysis or administrative law review will simply hinder the implementation of necessary security measures without truly protecting jobs.

In addition, the CWA-UAW Legislative Alliance urges the Subcommittee to move very carefully if it seeks to craft any special provisions for small businesses. Exempting

³ Getzner M (2002). The quantitative and qualitative impacts of clean technologies on employment. *Journal of Cleaner Production* 10: 305-319.

⁴ Patel D Engler R and Coyle D. (2008). *Still at Risk: Protecting New Jersey Jobs, Families, and Hometowns From Toxic Chemical Disasters*. Trenton: New Jersey Work Environment Council. <http://www.njwec.org/PDF/Still%20at%20Risk%20Report%20Oct%2008.pdf>

⁵ <http://www.delcotimes.com/articles/2009/07/07/opinion/doc4a5328eaf27dd959040181.txt> (Accessed July 20, 2009)

businesses that meet the Small Business Administration's definition of small business could potentially result in exempting some of the highest risk facilities in the country, including one that puts 12 million people at risk. Moreover, it was a small business in South Carolina that released the ammonia that killed a woman and sent five employees and two others to the hospital on Wednesday, July 15 of this year⁶. Any help provided to small businesses should be narrowly tailored and make it possible for the government to give substantial weight to the degree of the security risk, as well as the size of the facility.

Protection Against Abuse of Background Checks

The CWA-UAW Legislative Alliance recognizes the reasons why DHS believes that background checks are a necessary part of security. However, because it is extraordinarily difficult to question actions taken in the name of security, we believe the language needs to be carefully written so as not to provide an opportunity for unscrupulous employers to go on fishing expeditions. The purpose of H.R. 2868 is not to enhance or diminish the legal rights of employers to conduct general background checks or to use the information for reasons other than protecting facilities from terrorist attacks.

We are partially satisfied with the protections and the redress processes that have been put in H.R. 2868 to prevent abuse of background checks and the information collected in such checks. In particular, we are pleased that the only crimes that can form the basis of an adverse employment decision are felonies. We are pleased with the limits as to how far in the past an employee's background can be investigated and we are pleased with the limits on the information collected. We are also pleased that persons subject to an adverse employment decision will receive full wages and benefits until their appeals are exhausted. We believe that Section 550 of the Homeland Security Appropriations Act of 2007, which is the statutory basis for the existing Chemical Facility Anti-Terrorism Standard (CFATS), does not provide adequate protection against abuse

⁶ http://www.nytimes.com/2009/07/16/us/16brfs-AMMONIACLOUD_BRF.html (Accessed June 20, 1009).

of background checks. If H.R. 2868 is to replace Section 550, it needs additional language to correct that deficiency. One example of the problems with Section 550 is the DHS Guidance document, promulgated under Section 550, that encourages companies to interview friends, neighbors and family members and investigate misdemeanors, credit history, military service, civil court records and education⁷.

We believe that the following crucial improvements to H.R. 2868 still need to be made to correct deficiencies in the protection provided against abuse of background checks:

1. *Clarify that, with the exception of permanent disqualifying offenses, adverse employment decisions under the Chemical Facility Anti-Terrorism Act should be made only pursuant to a determination by DHS that an individual's offenses could cause the individual to be a terrorism security risk.* This is similar to what is done in the transportation sector. It would be a significant step back to say that, in the chemical sector, an employer can make an adverse employment decision WITHOUT a security threat determination. It is important that decisions made under the Chemical Facility Anti-Terrorism Act be made on the basis of a terrorism security risk so that the national interest in guarding against terrorism is served. But this legislation should not create a refuge for unscrupulous employers on fishing expeditions. It is equally important that this determination not be made by the employer in order to ensure that it is based on an objective analysis of the evidence. DHS has the capacity, experience and expertise to do so.
2. *Require that an employee subject to an adverse employment decision be informed of the basis for that decision and of the right to appeal and/or file for a waiver.* The National Employment Law Project has found that nearly 100% of the appeals filed by port transportation workers on the grounds that information

⁷ United States Department of Homeland Security: Office of Infrastructure Protection, Infrastructure Security Compliance Division (DHS, 2009). *Risk-Based Performance Standards Guidance: Chemical Facility Anti-Terrorism Standards*. Washington, DC: DHS.
http://www.dhs.gov/xlibrary/assets/chemsec_cfats_riskbased_performance_standards.pdf

reported in the background check was inaccurate were successful. Similarly, almost all of the waivers filed on the grounds that the individual had been rehabilitated since the crime and no longer posed a security risk were successful. Yet 13,000 individuals suffered adverse employment decisions because they were unaware of how to gain access to the appeal and waiver process⁸.

3. *Grant any employee who is subject to an adverse employment decision the option to exercise any rights the employee has under a collective bargaining agreement without foregoing the right to appeal or file for a waiver as guaranteed by H.R. 2868. Such language would prevent the use of this bill to undermine protections that are recognized in collective bargaining agreements.*
4. *Add to the annual report by DHS to Congress, required by H.R. 2868, a section requiring the Department to report the number workers subject to background checks, the number of adverse employment decisions, number of appeals and waivers pending, number of successful appeals and waivers, and the number of appeals and waivers denied. The purpose of this is to enable Congress to effectively evaluate the impact of the background check provisions.*
5. *Codify in statute the existing DHS regulatory language that protects individuals who have had a fully equivalent federal background check from having to undergo a second background check. This will render the process more efficient and protect workers from unnecessary delays.*

Worker Participation

The CWA-UAW Legislative Alliance believes that vulnerability assessments and security plans can benefit from workers' direct and current knowledge and experience of

⁸ National Employment Law Project (NELP, 2009). *A Scorecard on the Post-9/11 Port Worker Background Checks: Model Worker Protections Provide a Lifeline for People of Color, While Major TSA Delays Leave Thousands Jobless During the Recession*. New York: NELP.
http://nelp.3cdn.net/0714d0826f3ecf7a15_70m6i6fwb.pdf

plant operations, and from the knowledge of union staff, who enter multiple facilities in the course of their work and can bring the best non-proprietary ideas from one facility to another. Including workers and their representatives in this process will enhance security and protect against terrorist attacks at chemical facilities. For these reasons, we are pleased that both H.R. 3258 and H.R. 2868 grant employees and their representatives the right to participate in vulnerability assessments and site security plans, including participation in assessment of methods to reduce the consequences of a chemical release from an intentional act.

The CWA-UAW Legislative Alliance also is pleased that H.R. 2868 requires facilities to provide copies of the vulnerability assessment and site security plan as submitted to DHS to the employees and representatives who participated. However, we are disappointed with the limited provision of these documents under the H.R. 3258. The bill directs the EPA Administrator to provide procedures for sharing all portions of a vulnerability assessment and site security plan relating to the roles and responsibilities of employees with the employees and/or employee representatives who participated in their creation. Unfortunately, it lacks a clear requirement that the assessment of methods to reduce the consequences of a chemical release from an intentional act must be shared with employees and/or employee representatives who participated in their creation. This would allow an unscrupulous employer to change the assessment prior to submitting it to EPA. Those who had participated in the assessment would have no way to know this.

The CWA-UAW Legislative Alliance does not believe there should be any restrictions on which employees or representatives can be chosen to participate in vulnerability assessments and site security plans. No matter how well-intended the criteria, it is not possible to anticipate, in the halls of Congress, exactly which kind of expertise will be most suited to a particular facility. We fear that placing restrictions in the statute will permit a rare but all-too-real obstructionist employer to block a chosen employee representative on the grounds that that representative's particular knowledge, experience, training or education was not listed in the statute.

Both H.R. 2868 and the H.R. 3258 grant government inspectors the right of access to employees and employee representatives. But unlike the Occupational Safety and Health Act of 1970, they grant no rights to employees or to their representatives. The CWA-UAW Legislative Alliance believes that employees and their representatives should have a right to accompany a chemical security inspection. If this right is not written into law, neither employees nor their representatives may be notified of an inspection or offered a meaningful chance to participate. Employees and their representatives routinely participate in OSHA inspections, where their legal rights are explicit.

Employee Training

The CWA-UAW Legislative Alliance is pleased with the employee training language in H.R. 2868. We oppose any attempt to remove the language requiring employees to be trained in methods to reduce the consequences of a terrorist attack. We believe such training will make employees very valuable partners in reducing facility vulnerability.

H.R. 3258 includes language providing for a worker training grant program. A similar program was included in the version of H.R. 2868 reported by the Committee on Homeland Security. The CWA-UAW Legislative Alliance trusts that a similar program will be included in H.R. 2868 when it is reported by this Subcommittee.

Information for Accountability

The CWA-UAW Legislative Alliance would like to see the provisions in the bill related to government accountability strengthened in a number of ways. As important as it is not to let damaging information get into the wrong hands, it is equally important to let the public get access to enough information so it can know that our government, our potentially vulnerable facilities and other responsible parties are doing everything required to protect us from terrorist attacks. For this reason it is important to ensure that

access to basic facility identification and regulatory status information not be restricted. Such basic information will help develop public confidence in the chemical security program by allowing people to know that the chemical facility and drinking water facility security programs are working as they should to keep us secure.

In addition, the number of facilities that have been assigned to different tiers or are no longer regulated due to implementation of a method to reduce the consequences of a terrorist attack should be reported annually to Congress along with descriptions of the types of methods implemented. For example, a report might indicate that, in the past year, ten previously regulated facilities switched from chlorine gas to liquid chlorine bleach while twelve switched to ultraviolet light. This will not disclose any protected information. In addition, we recommend adding to the H.R. 3258 a requirement for reporting on procurement policies for water utilities that, if applied, would reduce or eliminate reliance on a threshold quantity for a substance of concern.

H.R. 3258 provides for criminal penalties of up to a year in jail for those who disclose protected information about the vulnerability of a drinking water system to terrorist attack. Yet for the owners and operators of a facility who leave the employees and the public vulnerable by non-compliance, there are only civil penalties. We believe this disparity should be corrected. Our members should be able to communicate about pressing safety and security concerns, so long as their communication does not directly replicate materials in vulnerability assessments and security plans, or is derived from sources other than vulnerability assessments or security plans.

Many parties play a role in improving industrial practices, including regulatory agencies, academic institutions, state and local governments, employees and employee representatives, national laboratories, inventors, private sector safety and security experts, and vendors of alternate technologies. For this reason, information on alternative technologies should be made available to these parties to the maximum extent consistent with security and with intellectual property law.

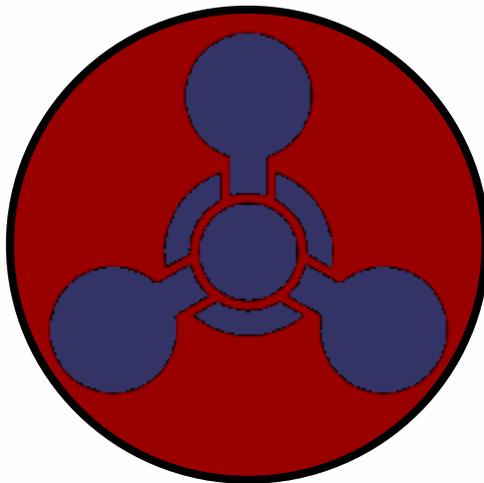
In conclusion, the CWA-UAW Legislative Alliance believes that now is the time to ensure the security of our chemical facilities and drinking water systems and the Americans who work in them and live near them. The existing CFATS regulations are inadequate. It is imperative that Congress move forward on true chemical and drinking water security. We strongly support passage of H.R. 2868 and H.R. 3258. We urge the Subcommittee to act now to protect America from a terrorist attack on our chemical facilities and drinking water systems. The CWA-UAW Legislative Alliance looks forward to working with the Members of this Subcommittee and the entire House to address this crucial problem. Thank you.

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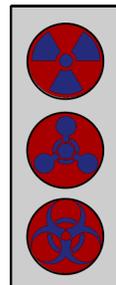
CHEMICAL TERRORISM

US Policies to Reduce The Chemical Terror Threat

**- Professor Margaret E. Kosal -
September 2008**



In Support of PSA's
REPORT CARD ON WMD
TERROR PREVENTION



The Partnership for a Secure America (PSA) is dedicated to recreating the bipartisan center in American national security and foreign policy.

Past decades have witnessed a hardening of partisan divisions on national security and foreign policy, limiting productive debate and blocking effective action by Congress and the Executive Branch on critical policy issues. This rising partisanship has soured working relationships among policymakers and their counterparts across the aisle at all levels of government, and our national security and foreign policy discourse has suffered as a result.

The Partnership for a Secure America was created to respond to this growing problem and to help foster sensible, bipartisan, consensus driven solutions to the major national security and foreign policy challenges facing our country.

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TABLE OF CONTENTS

PREFACE	3
REPORT CARD	5
INTRODUCTION	6
RECOGNITION / PREVENTION	9
RESPONSE	13
CRITICAL INFRASTRUCTURE	17
ELIMINATION	21
RECOMMENDATIONS	23
Improving Recognition and Prevention	23
Response: Strengthening Detection, Resilience, and Mitigation.....	23
Cracking Down on the Critical Infrastructure.....	23
Ensuring Elimination.....	23
NOTES	24



PREFACE

We are fortunate to live in a period of unprecedented peace among the world's major powers. Senior US officials meet routinely with representatives of our former Cold War rivals to discuss issues of shared concern, including security, the global economy, and the environment. While the US and our international partners cannot always come to agreement on these important issues, states are far more likely to deploy diplomatic, economic, and political tools to support their foreign policies than to order military action against one another.

But as the likelihood of military conflict among powerful states has declined, a grave new threat has emerged: International terrorists, operating in small cells and loosely organized global networks, could harness the world's most dangerous weapons to unleash massive destruction on our vulnerable population and economic centers. The 9/11 attacks reminded Americans that terror can strike anywhere at any time, and that terrorists can transform the proudest technological achievements of modern open societies into devastating weapons of mass destruction.

Pursuing its mandate to advise Congress and the President how best to prevent future terror attacks on the United

States, the 9/11 Commission identified the potentially deadly combination of the world's most dangerous people and history's most destructive weapons as the single greatest threat to US security. In its 2004 report, the Commission concluded that Al Qaeda and other terrorists were in the market for Weapons of Mass Destruction (WMD), including nuclear, chemical and biological weapons, and that the US must therefore invest maximum effort in preventing them from falling into terrorist hands.

The following report, which examines current US government policies and programs to prevent chemical terrorism, is one piece of PSA's larger effort to assess US government progress in implementing the recommendations of the 9/11 Commission. The findings of this report, combined with similar expert assessments focused on prevention of nuclear and biological terror attacks, are summarized in PSA's Report Card on WMD Terror Prevention (*available online at www.PSAonline.org*). These assessments underline the conclusion of the 9/11 Commission that the intersection of international terrorism and WMD proliferation poses an unparalleled and unacceptable threat our national security.

This study recognizes significant US government progress in detecting and mitigating chemical terror threats, including enhancements in interagency coordination. It finds similarly note-

worthy progress in elimination of military chemical stockpiles, though the pace could be faster and much remains to be done. Challenges remain, however, in the need for stronger multilateral cooperation to prevent proliferation, and for a more serious and comprehensive effort to secure chemical facilities and transportation infrastructure against theft or attack. Future progress will depend first and foremost on recognition by government and industry of the full range of chemical terror threats, so that policy responses may be effectively prioritized.

To fulfill the 9/11 Commission's call for "maximum effort" against WMD terrorism will require the full attention and enduring commitment of leaders on both sides in Congress, and from the next President. Working together, Congress and the Administration must bring funding levels, statutory authority and agency structures into line with the core objective of denying terrorists access to nuclear, chemical and biological weapons around the globe. Ensuring that our policymakers take the most effective steps toward this objective will require ongoing evaluation by outside experts, along the lines of this study and others cited herein, as well as by the government itself.

This report is not intended as the final word on the subject from PSA, the author, or any of our Advisory Board members, including the former Chair

and Vice Chair of the 9/11 Commission. As those distinguished Americans put it in their own statement in 2005, this is an endeavor that will require "sustained attention, over several years, perhaps even generations, from our political leaders."¹ In publishing the Report Card, we too seek to help maintain a sense of urgency, focus the resources and attention of government, and contribute to making the American people safer and more secure.

Matthew A. Rojansky
PSA Executive Director

¹ Thomas H. Kean and Lee H. Hamilton, "Report on the Status of 9/11 Commission Recommendations Part III: Foreign Policy, Public Diplomacy and Non-Proliferation", accessed at <http://www.9-11pdp.org/press/2005-11-14_remarks.pdf>



REPORT CARD

Pillars Of Chemical Terror Prevention:

Status in 2008:

Recognition and prevention of chemical terror threat

Multilateral non- & counter-proliferation initiatives lacking US follow through; Failure to recognize adequately chemical terrorism threat.

Response: Detection, resilience and mitigation programs

Strong efforts for interagency coordination at federal level; Revolutionary defense countermeasures research budget cut in FY08; State laboratories unprepared; Response exercises occurring but unrealistic/inadequate.

Protecting Critical Infrastructure (industrial chemicals, facilities, transport)

Physical security of industry facilities low priority; Chemical transport security assessment long overdue.

Elimination: Demilitarization of chemical weapons

Half US stockpile destroyed; Additional funding needed for construction of remaining destruction facilities to reduce the overall risk; Additional funding and active engagement needed for destruction of Russian and Libyan weapons stockpiles.

GRADE

C -

B

C+

B

OVERALL GRADE

B-

INTRODUCTION

Chemical weapons have been used both by military forces on the battlefield and by terrorists in cities and towns. In this respect, they are unique among the weapons of mass destruction (WMD) that have been used in the twentieth century. The world's recognition of the horror of chemical weapons prompted the only disarmament treaty that eliminates an entire category of weapons under strict international verification.

International terrorists have clearly demonstrated intent to obtain, develop, and use chemical weapons. As the leader of a larger radical Islamist movement, Al Qa'eda has advocated the use of terrorism as a means to cause the economic collapse of the US and the Western world. The exploits of Al Qa'eda in Afghanistan to test unspecified lethal chemical agents on animals have been well-covered in the news media.¹

Additional evidence and analysis of al Qa'eda's extensive interest in chemical agents was highlighted in a 2005 Intelligence Commission report.² Other domestic and international terrorists have sought, planned, obtained, and used chemical agents:

- ★ "The greatest threat before humanity today is the possibility of a secret and sudden attack with chemical, or biological, or nuclear weapons." President George W. Bush, Remarks at the National Defense University, February 11, 2004.³
- ★ "We must be prepared to stop rogue states and their terrorist clients before

they are able to threaten or use WMD." National Security Strategy of the United States of America.

- ★ "Al Qa'eda and more than two dozen other terrorist groups are pursuing CBRN [chemical, biological, radiological, and nuclear] materials." Testimony of Director of Central Intelligence George J. Tenet before the Senate Select Committee on Intelligence, February 2004.
- ★ "The gravest danger our nation faces lies at the crossroads of radicalism and technology." National Strategy to Combat Weapons of Mass Destruction.
- ★ "Chemicals continue to be weapons of choice for terrorist attacks. They are readily available and have the potential to inflict significant casualties (from a few to perhaps many thousands in technically possible, if improbable, high-end attacks). And they have characteristics that make them attractive for deployment against an open society: easily concealed, undetectable at a distance, and visually indistinguishable from materials in everyday use." National Research Council, Making the Nation Safer: The Role of Science and Technology in Countering Terrorism, 2002.

The fundamental technology intrinsic to chemical weapons is more widespread than that of any other WMD; synthetic chemistry is ubiquitous to the industrial world. Making chemical weapons requires some technical skill, but over time much of the information needed to make these materials has drifted into the public domain. Technology is rapidly enabling new methods for creating novel agents and easier dissemination. All of which combines to increase terrorist capability and our vulnerability to the threat of chemical terrorism.



US efforts to prevent terrorist acquisition and use of chemical weapons can be grouped into four broad policy pillars:

★ **RECOGNITION & PREVENTION:** Recognize & reduce the risk of chemical terrorism.

- ★ Nonproliferation
- ★ Counterproliferation
- ★ International cooperation to prevent chemical weapons terrorism
- ★ Dispersal of small-scale production facilities
- ★ Emerging threats - new agents, toxic industrial chemicals, improvised agents, and delivery systems

★ **RESPONSE: IMPROVED DETECTION, RESILIENCE, AND MITIGATION:** Foster countermeasure development, response capacity, and consequence management.

- ★ Invest in research and development for new physical and medical countermeasures, such as detectors and therapeutics
- ★ Consequence management
- ★ Lessons learned and standardized Best Practices
- ★ Invest in training and materials for first responders
- ★ Risk communication to the public
- ★ Domestic capacity

★ **CRITICAL INFRASTRUCTURE:** Reduce the risk of terrorists exploiting our own infrastructure via a deliberate attack on an industrial chemical facility as a means to cause either mass-effect terrorism - release of toxic vapor - or

destruction of the nation's critical infrastructure.

- ★ Efforts to reduce risk at industrial chemical facilities and other industrial facilities that use or store toxic industrial chemicals (TICS) or toxic industrial materials (TIMS)
- ★ Efforts to strengthen and limit vulnerabilities within US chemical critical infrastructure, including rail transport

★ **ELIMINATION:** Destruction of remaining chemical weapons stockpiles.

- ★ Reduce the risk of chemical terrorism involving unsecured or under-secured traditional chemical warfare agents and munitions
- ★ Reduce domestic risk through safe and timely destruction of US stockpile
- ★ Reduce international risk through assistance to accelerate safe and timely destruction of the Russian chemical weapons stockpile



RECOGNITION/ PREVENTION

International terrorists have clearly demonstrated the intent to obtain, develop, and use chemical weapons. In the 1990's, the Japanese cult, the Aum Shinrikyo, employed hydrogen cyanide, VX nerve agent, and sarin nerve agent against civilians. As the leader of a larger, radical Islamist movement, Al Qa'eda has advocated the use of terrorism as a means to cause economic collapse of the US and the Western world. The exploits of Al Qa'eda in Afghanistan to test unspecified lethal chemical agents on animals have been well-covered in the news media.⁴ The recovered tactical manual, *Muswatul Jihad al-Afghani (The Encyclopedia of Jihad)*, contains 11 volumes detailing development and concepts of terrorist operations for chemical agents and explosives. Another radical Islamic group, Ansar al-Islam in northern Iraq, was reportedly developing cyanide-based chemical agents in 2002.⁵ Use of looted Iraqi chemical munitions against U.S. troops was reportedly threatened by Iraqi insurgents.⁶ In addition, Iraqi insurgents incorporated chlorine tanks into improvised explosive devices on a number of occasions in early 2007, releasing clouds of toxic gas that inflicted civilian and military casualties. There is a communicated and clear intent and capability by terrorists to use traditional or improvised chemicals.

The President's National Security Strategy⁷ directs executive agencies on national se-

curity issues. With regard to chemical (*and biological*) defense, it emphasizes the importance of proactive counterproliferation efforts described as “[p]reventing our enemies from threatening us, our allies, and our friends with WMD.”⁸ The National Strategy to Combat Weapons of Mass Destruction identified three pillars as core to the comprehensive strategy.⁹ The first two pillars, Nonproliferation (impeding proliferation through diplomacy) and Counterproliferation (impeding proliferation through deterrence, passive defense, interdiction and military action) relate directly to the first part of this assessment; the third pillar, Consequence Management, is addressed in the second section on detection, resilience, and mitigation. Reducing the risk from state-based chemical weapons helps to lower the risk of chemical terrorism by eliminating one possible route for terrorists to obtain traditional chemical agents, precursors, or weaponization materials, whether via transfers from state to non-state actors, by theft or deception, or other means. Traditional and innovative new approaches to nonproliferation and counterproliferation are key elements of a policy to reduce the risk of chemical terrorism.

The Chemical Weapons Convention (CWC) - a multilateral arms control and disarmament agreement - is central to international limitations on chemical weapons proliferation, reducing the risk of chemical terrorism through the universality of the convention and full implementation of its program.

“The Chemical Weapons Convention [CWC] stands as a monument to the world's determination to eliminate one

of the most inhumane weapons ever conceived.” United Nations Secretary General Ban Ki Moon.¹⁰

The US should foster and encourage provisions to strengthen the international regime and its implementing body. In conjunction with the Second Review Conference of the CWC, the Senate reaffirmed its strong support of the treaty.¹¹ In furtherance of the treaty aims, the US should back efforts to control the transfers of dual-use chemicals.¹² CWC member countries that have not enacted domestic export-control legislation and nonmember countries with weak export controls can compromise international efforts to limit the risk from the increasing global trade in dual-use chemical technologies and materials. Additionally, the Schedules of Chemicals in the CWC - the lists of toxic chemicals and precursors - have not been updated since the treaty entered into force in 1997. The US should take a leadership position with regard to effective incorporation of additional chemicals and precursors into the list of Scheduled Chemicals in order to be able to better respond to emerging and other novel agents, including those at the intersection of chemistry and biology and potential hostile applications of nanotechnology.¹³ In his statement at the recent Review Conference, US Ambassador Eric Javits emphasized the need for increased funding and more frequent meetings of the CWC’s Science Advisory Board, which considers new technological advances relevant to the treaty.¹⁴

Complementing the traditional multilateral arms control approach to reducing the risk of chemical agents, the President’s Proliferation Security Initiative (PSI) represents

an innovative new approach to counterproliferation that should be strengthened further. All of the issues highlighted with respect to the PSI in the companion paper¹⁵ on policies to reduce threats of bioterrorism are applicable to chemical terrorism.

Another tool contributing to reducing the risk of chemical terrorism is the State Department’s Nonproliferation of Weapons of Mass Destruction Expertise (NWMDE) program, which encompasses the programs formerly referred to as “Science Centers/Bio Redirection” and reflects this broader scope. The growing global threat to U.S. national security from available WMD-relevant expertise prompted Congress to broaden the program’s coverage to countries beyond the former Soviet Union. Most of the effort has been directed to limiting the hostile application of knowledge gleaned from the Soviet Union’s former offensive biological weapons program, which largely reflected technology of thirty years ago. Technical knowledge associated with the former Soviet offensive chemical weapons program needs to be recognized and incorporated into such programs.

A significant success of U.S. foreign policy with respect to chemical terrorism is Libya’s renunciation of weapons of mass destruction, which was announced in December 2003. This former state sponsor of terrorism agreed to eliminate all elements of its chemical weapons programs, eliminate all chemical weapons stocks and munitions, accede to the Chemical Weapons Convention, and allow immediate inspections and monitoring to verify all of these actions. The United States agreed to assist in the destruction of Libya’s chemical weapons stockpile, which includes 23 met-



ric tons of chemical agents. The two governments initially agreed to a contract under which the U.S. would have contributed \$45 million and Libya around \$15 million, but Libya withdrew from the agreement in June 2007. The specific reasons for terminating the contract remain undisclosed.¹⁶

Within the framework of the Group of Eight (G8) Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, launched in 2002, the United States promised to match up to \$10 billion provided by other states for the elimination of surplus unconventional weapons in the former Soviet Union and to provide assistance on export controls. This pledge, however, has not resulted in offers of additional funding beyond the regular Cooperative Threat Reduction (CTR) appropriations, and progress in meeting the G8 program's goals has been limited at best.

Specifically highlighting the need for international agreements to counter weapons of mass destruction terrorism, the UN Security Council unanimously adopted Resolution 1540 on April 28, 2004, mandating that all states enact domestic legislation and systematic controls to prevent terrorists from acquiring weapons of mass destruction, including the adoption of appropriate controls over WMD-related materials, and establishing a 1540 Committee to oversee national implementation. Two years later, the Security Council unanimously extended the mandate of the 1540 Committee under Resolution 1673. The effectiveness of the resolutions has been questioned because of

their lack of specificity regarding “appropriate effective national export and transportation controls.”¹⁷ The U.S. should take a more proactive role in insuring that consistent and technically robust definitions are developed. Thus far the U.S. has been the only major provider of export control assistance. The need for enhanced technical assistance to carry out the resolution remains.

While effective controls on classical chemical warfare agents have been put in place over the last five years, there has been a failure of creativity in considering

Improved chemical terrorism expands the agents of concern from the approximately fifty classical chemical warfare agents to thousands of toxic industrial chemicals.

and responding to the expansion of terrorist tactics to include nontraditional chemical agents and delivery systems, such as improvised chemical devices (ICDs)¹⁸ Attacks on industrial chemical facilities may be seen as one element of the expansion of chemical warfare from the traditional state-based chemical weapons programs

of the Cold War and Saddam Hussein's Iraq to improvised agents, munitions, and methods for terrorism. Improvised chemical terrorism does not entail sophisticated knowledge or engineering requirements, nor advanced dissemination methods: “The *ease* or difficulty for terrorists to cause mass *casualties* with an improvised chemical weapon or biological device *depends* on the *chemical or biological agent selected*.”¹⁹ Chemical terrorism is likely to be a crime of opportunity, and improvised chemical terrorism expands the agents of concern from the approximately fifty classical chemical warfare (CW)

agents to thousands of toxic industrial chemicals.

Regarding the threat of chemical terrorism, the relevant knowledge and materials (such as commercial dual-use chemicals) are globally dispersed. Thus, the threat of chemical terrorism differs markedly from that of nuclear terrorism, in which the ability to build an improvised nuclear device is limited by the availability of fissile material. Stocks of fissile material from the Cold War can and should be secured. In the case of bioterrorism, some biological pathogens are widely available, but the practical knowledge and infrastructure needed to produce mass-effect biological weapons may be much more limited than is widely perceived. Former Secretary of the Navy Richard Danzig has written about what he calls the “reload” phenomenon: “Our national power to manage the consequences of repeated biological attacks could be exhausted while the terrorist ability to reload remains intact.”²⁰ With chemical terrorism, the “reload” factor - the ability to conduct multiple, dispersed attacks within a short time period - is equivalent to or higher than that for biological terrorism given the ubiquity of toxic chemical compounds throughout the industrialized world. Because it is both infeasible and economically undesirable to impose severe control measures on the commercial chemical sector, the best threat reduction policy may be to reduce the motivation to acquire and use such weapons.

PREVENTION: C -

RECOGNITION/



RESPONSE

Passive defense and consequence management contribute substantially to the resilience of the nation and the ability to minimize the impact of a chemical attack on the affected population. Early detection of a chemical attack could enable first responders to treat the exposed and protect the unexposed, thereby significantly reducing the number and severity of casualties. Methods to detect a chemical terrorist attack can either focus on the detection of toxic clouds or rely on more sophisticated techniques that probe a given sample for particular chemical agents.

Since its inception, the Department of Homeland Security (DHS) has been a major actor in addressing the risk of chemical terrorism. *The National Strategy for Homeland Security* and *Securing Our Homeland: The 2004 DHS Strategic Plan* both contain significant recommendations on detecting chemical materials and attacks, improving chemical sensors and decontamination techniques, and harnessing science and technology to counter terrorism.²¹ *Securing Our Homeland* emphasizes capabilities development and making use of “the vast resources and expertise from the Federal Government, private sector, academic community, non-governmental organizations, and other scientific bodies.”²² A cross-cutting theme of the U.S. national strategies is the need for increased interagency coordination.

Among the DHS Science and Technology Directorate’s six divisions, the Chemical and Biological Division “conducts analyses for better characterization and prioritization of the threat, develops detection systems to provide early warning of a possible attack so as to minimize exposure and speed treatment of victims, conducts forensic analyses to support attribution, and works with federal partners who have lead responsibilities in decontamination and restoration, agrodefense, and food security.”²³ The Chemical Countermeasures Program has established a Chemical Security Analysis Center with a national chemical defense architecture and pre-event assessment, discovery, and interdiction capabilities for chemical threats; completed development and validation for forensic analysis of sulfur mustard and nerve agents; developed and transitioned to the Environmental Protection Agency (EPA) a mobile laboratory for environmental analysis of chemical agent contamination; and prototyped multiple chemical detectors.²⁴ Additional efforts are needed to enhance rapid recovery from chemical attacks. The DHS program also works with the Departments of Agriculture, Health and Human Services, Justice, and the EPA and coordinates the interaction between those agencies and the intelligence and defense communities. When appropriate, the Science and Technology Directorate also aims to develop “integrated chemical, biological, radiological, nuclear, and explosives defense across civil and military sectors.”²⁵

The Department of Defense (DoD) is a critical resource and stakeholder in the development, testing, and fielding of new

countermeasures against chemical warfare agents and chemical terrorism. Key DoD elements that are active in this area include the Joint Chemical and Biological Defense Program (CBDP),²⁶ the DoD service laboratories, and the US Army Chemical Corps. The CBDP provides research, development, and acquisition programs to support passive defense capabilities (e.g., detectors, personal protective equipment [“gas masks”], decontaminants, medical countermeasures [vaccines and therapeutics], and diagnostics), counterproliferation, and consequence management. In support of counterproliferation, the CBDP provides operational capabilities tailored to the unique characteristics of the various chemical and biological weapons, including emerging threat agents, to facilitate passive defense and force protection. These capabilities also provide U.S. forces with the ability to rapidly and effectively mitigate the effects of a chemical attack against U.S. forces, whether at home or abroad.

While the DoD has excelled at fielding and transitioning to the commercial sector items of chemical defense equipment, more attention is needed to develop new enabling technologies for chemical defense. The Transformational Medical Countermeasures Initiative (TMTI)²⁷ was launched in December 2006 and includes the development of new antidotes and treatments for chemical warfare agent exposure; it was highlighted in the 2006 Quadrennial Defense Review (QDR).²⁸ The physical countermeasures counterpart of

TMTI is an even more recent effort to develop revolutionary countermeasures against the evolving WMD threat. Nevertheless, the FY08 Defense Appropriations Bill cut \$100 million from the TMTI and \$39 million from the revolutionary physical countermeasures initiative. The Defense Department should continue to advocate assertively for revolutionary science and technology programs, and Congress should restore funding for these efforts, which engage academia and the private sector.

A critical component of consequence management and response to incidents of chemical terrorism is the capacity and capability of public health laboratories across the nation, including the Laboratory Response Network. This leading indicator has been assessed twice since the release of the original findings of the National Commission on Terrorist Attacks upon the United States. In 2003, a survey of the capacity of public health laboratories to respond to a chemical terrorism incident, conducted by the Association of Public Health Laboratories (APHL), “uncovered serious inadequacies as well as needed improvements in worker safety, facility security and methods for agent analysis of environmental samples.”²⁹ Fifty percent of state laboratory directors rated their capacity to respond to a chemical terrorism event as poor. A follow-up survey in 2005 found that “laboratory preparedness for chemical terrorism continues to lag behind activities associated with bioterrorism, primarily as a result of the delay in the allocation of federal funds.” This under-

The Defense Department should continue to advocate assertively for revolutionary science and technology programs, and Congress should restore funding for these efforts.



funding has led to inadequate hiring of laboratory staff and modernization of facilities and equipment.³⁰

The Top Officials (TOPOFF) series of terrorism preparedness exercises have involved senior officials at every level of the U.S. government as well as representatives from the international community and private sector. Lessons learned from these exercises should serve as the basis for developing standardized Best Practices for the nation's first-responder community, building domestic capacity and coordination across the levels of government, and developing strategies for better risk communication to the public in the event of a chemical terrorism event. TOPOFF 1 and 3, in May 2000 and April 2005, respectively, both incorporated notional terrorist events with sulfur mustard (a blister agent). Unfortunately, the release of after-action reports has been slow, limited, and marginal in content. In addition, the value of TOPOFF 3 was limited by the artificiality of the response to the incident scenario: first-responder vehicles were lined up like a parade in a staging area and preceded to the incident site in an orderly, staged manner. There was no attempt to simulate the effects of traffic, multiple uncoordinated units arriving at the same time, or responses at different locations. Similarly, during the start-up of the Joint Operations Center (JOC), all of the disparate agencies assembled at the same time. Decontamination, long-term mitigation, and remediation were treated as afterthoughts. Finally, there is little evidence that the lessons learned from TOPOFF 1 and 3 have been transferred to states and cities that did not participate in the exercises.³¹

RESPONSE:

B



CRITICAL INFRASTRUCTURE

Policies to reduce the threat of a terrorist attack against industrial chemical facilities - critical infrastructure with the potential to cause mass casualties - have been driven by incomplete and, in some cases, unrealistic assumptions. Yet it is essential to reduce the risk that terrorists could attack an industrial chemical facility as a means to cause the release of a plume of toxic vapor and inflict mass casualties, or to inflict economic damage by destroying a key element of the nation's critical infrastructure.³²

The worst-case scenario for a terrorist attack on a domestic industrial chemical facility would result in up to 2.4 million people killed or injured, as calculated by the U.S. Army Surgeon General's Office.³³ More than 15,000 facilities throughout the U.S. produce, store, and transport industrial chemicals in substantial quantities.³⁴ In 1996, the U.S. Environmental Protection Agency (EPA) determined that "a worst-case release" could endanger more than one million people located near one of the 123 identified chemical facilities.³⁵ More recent assessments assert, "at present, about 600 facilities could potentially threaten between 100,000 and a million people. About 2,000 facilities could potentially threaten between 10,000 and 100,000 people."³⁶ The numbers are staggering.

The Union Carbide disaster in Bhopal, India, in December 1984 is illustrative of the scale of catastrophe that is possible from a terrorist attack on a chemical industry plant. This incident, whose cause remains uncertain, resulted in over 3,800 fatalities from the initial release of the toxic gas methyl isocyanate, and well over 200,000 exposed individuals who have suffered chronic symptoms over the ensuing twenty years. Possible motivations for attacking chemical industry infrastructure include economic terrorism, disruption of the government in power, protest of a single incident or event, or protest of U.S. foreign policy.³⁷

Current analysis and policy on protecting chemical industry facilities from terrorist attack has focused - *to an almost myopic extent* - on reducing vulnerability.³⁸ Too many analysts and observers have emphasized the potential for sabotage and focused on the perceived "insider" threat: "Possibly the most serious threat is posed by external adversaries aided by insiders."³⁹ Most preparedness and response plans have dealt mainly with human security (employees, contractors, and workers); for example, "obvious strategies" advocated by chemical industry representatives include the "use of employee identification cards, background checks for employees and contractors, and additional surveillance in the form of obvious cameras as well as the more covert."⁴⁰ The only physical security upgrade that is often mentioned is "additional fencing." While widely perpetuated, there does not appear to be any evidence or indication of sophisticated attempts to infiltrate an industrial chemical facility as a temporary employee or to co-opt a permanent employee in or-

der to cause a mass-casualty toxic chemical release. Only minor, speculative accounts of subterfuge by terrorists motivated to attack chemical infrastructure appear in the historical record. Additionally, data on the causes of industrial incidents over a thirty year period indicates that only 1% was attributable to sabotage or arson: the leading cause of accidents was found to be mechanical failure (44%).⁴¹ A survey of U.S. workers by the Paper, Allied-Industrial, Chemical & Energy Workers International Union (PACE) found that fewer than 17% of chemical industry facilities have enacted “fundamental changes that would lower the impact of an accident or attack by making chemical processes inherently safer or by storing smaller amounts of hazardous materials on-site.”⁴² Increasing basic perimeter security to prevent a bomb or other incendiary device from impacting a facility and the development of inherently safer, economically beneficial, and efficient technology should be prioritized.

The risk associated with a terrorist attack on chemical plants has been singled out as “one of the most urgent threats to our safety” that has not been given adequate attention in U.S. government efforts to increase domestic security.⁴³ According to an editorial in the *New York Times*, “the nation’s chemical plants are still a horrific accident waiting to happen. And Washington has caved to pressures from interest groups, like the chemical industry, that have fought increased security measures.”⁴⁴

Washington has caved to pressures from interest groups, like the chemical industry, that have fought increased security measures.

Another component of critical infrastructure protection is the need to reduce risks associated with the commercial transportation of chemicals, whether by road or rail. Approximately 1 millions tons of “hazardous materials,” along with another 3 million tons of highly toxic, corrosive chlorine, are transported by rail each year.⁴⁵ These materials are routinely transported through a variety of major metropolitan areas, including Washington, D.C., Newark (adjacent to New York City), Los Angeles, and Atlanta.

In late 2006, the Department of Transportation proposed revisions to the current requirements in the Hazardous Materials Regulations for the transportation of hazardous chemicals by rail.⁴⁶ Of particular note is the proposed requirement that rail carriers compile annual data on certain shipments of chemicals. This information would then be used to conduct safety and security assessments, assess alternative routing options, and make routing decisions based on the annual findings. A final rule has yet to be issued because of “unanticipated issues requiring further analysis.”⁴⁷ The Transportation Security Administration (TSA) has been tasked with overseeing the development and implementation of a system to track the location of rail cars carrying certain toxic chemicals.⁴⁸ Included among the Implementing Recommendations of the 9/11 Commission Act of 2007, signed into law by President Bush in August 2007, were the major legislative points of the Surface Transportation and Rail Security (STARS) Act of 2007 (as Title XIII & XV of the “9/11



Bill”), which authorized new rail security assessments, grant programs, research and development initiatives, and requested specific plans to address transportation of hazardous materials. For the first time, the Act provides a statutory framework for the nation’s rail security efforts setting specific goals, tasks, and timelines for security improvements.

The final component of this pillar concerns chemical facilities that are part of the nation’s critical infrastructure. The chemical industry is the largest U.S. exporter (more than \$80 billion in 2001 alone), accounting for more than 10 percent of all exports by dollar.⁴⁹ This \$454 billion a year industry employs more than one million people domestically, is responsible for one of every seven U.S. patents, and contributes more than \$31 billion annually to research and development (more than double the R&D contribution from the entire biotechnology industry).⁵⁰

The raw chemicals, specialty chemicals, life-science products, and consumer products manufactured by the chemical industry are part of a nation’s critical infrastructure.⁵¹ This industry affects agriculture through fertilizers and pesticides, and the aerospace and defense industries through composite materials, coatings, and chemical feedstocks. If the ability of the U.S. chemical industry to produce raw and fine chemicals were compromised, it would have a major deleterious impact on U.S. defense, economic security, and short-term sustainability. Because chemical industry sites generate products that contribute to the maintenance of domestic security, public health, and the economy, they are considered part of the U.S. criti-

cal infrastructure.⁵² Targeted attacks on a few discrete chemical industry facilities that play a critical role in the nation’s economy, general welfare, and defense could have disabling effects far exceeding the immediate death and destruction.⁵³

In 2007, the Department of Homeland Security finally issued the interim final rule on Chemical Facility Anti-Terrorism Standards (CFATS), which established risk-based performance standards for physical security at chemical facilities holding threshold amounts of 342 chemicals.⁵⁴ Until January 2006, DHS had not received a congressional mandate to implement and enforce industry-wide security measures.⁵⁵ Industry-backed pressure and lack of strong advocacy from the administration had prevented the adoption of stronger Congressional Committee-reported bills, such as S.2145 and HR.5695. In 2006, a compromise was incorporated into the FY2007 DHS Appropriations Bill, which was backed by the chemical industry and the administration but was opposed by many chemical safety proponents. Federal representatives have estimated that fewer than 1,000 facilities will be assessed to fall into the highest risk categories, called Tier 1 and Tier 2 facilities.⁵⁶ Another 5,000-8,000 chemical facilities are anticipated to fall into the Tier 3 and Tier 4 categories. The regulations incorporate flexibility through multiple options, such as the Alternate Security Programs (ASPs).

Nevertheless, a strong emphasis remains on the perceived risk of the insider threat, rather than strengthening external barriers or providing incentives for the adoption of safer, alternative chemical manufacturing

technologies and processes to reduce the use of highly toxic materials and thereby reduce risks. Other criticisms include the lack of milestones for compliance, the lack of whistleblower protections, potential conflicts with stricter state or local regulations, and the lack of applicability to water- and waste-treatment facilities that utilize chlorine.⁵⁷

CRITICAL INFRASTRUCTURE: C+



ELIMINATION

The final pillar in reducing the threat of chemical terrorism concerns unsecured or under-secured stockpiles of chemical warfare agents and munitions. After the September 2001 terrorist attacks, the Department of Defense decided to accelerate destruction of the remaining U.S. chemical weapons stocks because these sites were potential terrorist targets. Each eliminated weapon and manufacturing facility is one less that could be targeted by terrorists. Internationally, the principal hazard remains the chemical weapon stockpiles of the former Soviet Union.⁵⁸

In January 2008, the U.S. Army Chemical Materials Agency announced the safe, effective, and complete destruction of 50% of the US chemical agent stockpile.⁵⁹ The U.S. met the 2007 deadline for destroying 45% of its stockpile under the Chemical Weapons Convention. Between 2005 and 2007, destruction activities were completed at the chemical weapons storage

depot in Aberdeen Proving Ground, Maryland, and destruction operations were initiated at the depots in Pine Bluff, Arkansas, and Newport, Indiana. At present, five chemical weapons destruction facilities are operational and are scheduled to complete destruction of more than 78% of the U.S. stockpile by 2017. Of the two remaining facilities, the Blue Grass Army Depot in Kentucky - with 523 tons of mustard and VX and sarin nerve agents in rockets and projectiles - is still in the planning phase, and initial work on construction of the facility at the Pueblo Chemical Depot in Colorado - with 2,611 tons of mustard agent in mortars and artillery shells -began in April 2008.⁶⁰

Blue Grass and Pueblo are the two Assembled Chemical Weapons Alternatives (ACWA) sites pursuing non-incineration methods for destruction of chemical agents. The Army currently plans for the Pueblo facility to begin operations in 2015 and the Blue Grass facility to commence destruction in 2017.⁶¹ The U.S. chemical weapons destruction effort has been funded at around \$1.3 to \$1.4 billion per year. Increased funding over the past three years could have expedited the con-

	FY2005	FY2006	FY2007	FY2008
Domestic CW destruction budget	\$1,373.0 M (appropriated) ⁱ	\$1,386.8 M (appropriated) ⁱⁱ	\$1,277.3 M (appropriated) ⁱⁱⁱ	\$1,512.7 M (proposed)
Construction for Blue Grass and Pueblo	\$813.4 M ^{iv}		\$131.0 M	Pueblo: \$35.2 M Blue Grass: \$69.0 M ^v
ACWA Budget	\$175.0 M (appropriated) ^{vi}	\$52.5 M (appropriated) ^{vii}		

ⁱ http://www.pmacwa.army.mil/ip/dl/acwa_fy05_cma_annual_report.pdf

ⁱⁱ http://www.pmacwa.army.mil/ip/dl/acwa_fy06_cma_annual_report.pdf

ⁱⁱⁱ John Warner National Defense Authorization Act for Fiscal Year 2007

^{iv} Pub. L. No. 109-13

^v FY08 Military Construction (MILCON), plus a potential combined \$49.3 million with Amendment 2062 (Senate Calendar).

^{vi} http://www.pmacwa.army.mil/ip/dl/acwa_fy05_cma_annual_report.pdf

^{vii} http://www.pmacwa.army.mil/ip/dl/acwa_fy06_cma_annual_report.pdf

struction of the Blue Grass and Pueblo de-
struction facilities. Funding for construc-
tion at the two sites in this fiscal year is
slightly more than \$104 million. In order
to complete weapons disposal in line with
CWC treaty requirements, that amount
would have to be substantially increased
over multiple years. More importantly,
destruction of the stockpile will directly
reduce the threat to the surrounding com-
munities, and to the nation, that stems
from these aging munitions.

Congress has repeatedly expressed its con-
cern over the slow progress at Pueblo and
Blue Grass. The 2007 Defense Authorization
Act includes a “sense of Congress” provi-
sion asking the Secretary of Defense to
“make every effort to ensure adequate
funding to complete the elimination of the
United States chemical weapons stockpile
in the shortest time possible” and to keep
Congress informed with an annual schedule
for stockpile destruction.

In December 2007, the Government Ac-
countability Office (GAO) issued an up-
dated report of the status of recommended
changes to management of the chemical
weapons disposal program.⁶² Among the
thirteen recommendations to reduce the
risk of future program schedule extensions
and cost growth, the GAO noted that the
Army’s Chemical Materials Agency risk
management process has not been fully
developed or integrated with DOD’s risk
management process, “[a]s a result, man-
agers lack an integrated and systematic
approach to evaluate and manage risk.”
The Defense Department fully or partially
concurred with 12 of GAO’s recommenda-
tions.

The United States has been assisting Russia
with the destruction of its chemical weap-
ons stockpile since the collapse of the So-
viet Union. In 1992, Congress authorized
funding for the construction of a nerve
agent destruction facility at Shchuch’ye,
which contains one-seventh of Russia’s de-
clared chemical weapons stockpile. Initial
cost estimates have doubled since then,
and a U.S.-Russian dispute over subcon-
tracting led to lengthy delays. A recently
signed bilateral agreement obligates Russia
to assume all costs and responsibilities for
the destruction program beyond current
U.S. appropriations. In its FY 2008 budget
request, the Bush administration did not
request further funding for the Shchuch’ye
facility.⁶³

The U.S. government has also helped Alba-
nia and Libya to eliminate their stocks of
chemical weapons. Although Libya with-
drew from the U.S. assistance agreement
in the summer of 2007, Albania success-
fully incinerated its entire stockpile of 16
metric tons of blister from February to July
2007 at a cost of \$4 million provided by
DoD’s Cooperative Threat Reduction pro-
gram.⁶⁴

ELIMINATION: **B**



RECOMMENDATIONS

Improving Recognition and Prevention

1: The threat of chemical weapons terrorism - traditional, improvised, and novel - must be recognized as real rather than dismissed as a relic of history. Traditional and innovative new approaches to nonproliferation and counterproliferation are key elements of a policy to reduce the risk of chemical terrorism. The US should support efforts to strengthen the international regime to control transfers of dual-use chemicals and expand the list of scheduled chemicals.

Preparing the First Response: Strengthening Detection, Resilience, and Mitigation

2: While individual program managers across the federal government may coordinate extensively on individual programs, higher level strategic interagency coordination is needed. The Departments of Homeland Security and Defense should advocate assertively for investments in basic research that will enable revolutionary science and technology capabilities that engage academia and the private sector and Congress should fund them.

Protecting Critical Infrastructure

3: The federal government is late on implementing policies with respect to reducing the threat of terrorism directed at industrial chemical facilities. Execution of such policies is yet to be observed. It is strongly recommended that vulnerability and the myth of the insider threat be de-emphasized and that the concept of fostering development of inherently safer, economically beneficial, and efficient technology be supported. Information on the Transportation Security Administration (TSA) tracking system for rail cars carrying certain toxic chemicals should be made available for review and oversight.

Ensuring Weapons Elimination

4: Increase funding and accelerate destruction of the aging U.S. chemical stockpile, particularly the Blue Grass Army Depot and Pueblo Chemical Depot, in order to reduce risk of accidental on-site release of lethal materials and targets for terrorists. The Defense Department should implement the Government Accountability Office (GAO) recommendations on improving management of its chemical weapons demilitarization and disposal program. Funding for Cooperative Threat Reduction Programs should be increased and new programs should be initiated to address the ongoing challenges of destruction of the Russian and Libyan chemical stockpiles.

NOTES

- ¹ **Dana Priest**,
“Archive of Al Qaeda Videotapes Broadcast; Dogs Shown Dying from Toxic Vapor,”
The Washington Post, 21 August 2002, p. A13;
Judith Miller,
“Qaeda Videos Seem to Show Chemical Tests”,
The New York Times, 19 August 2002 Monday, p. 1A; and
Jack Kelley and Bill Keveney,
“Tapes of al-Qaeda Supply Evidence of Terror Plans,”
USA Today, 20 August 2002, p. 4A.
- ² “Report to The President of the Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction (Unclassified)”,
31 March 2005,
<http://www.wmd.gov/report/index.html>
- ³ Re-iterated in the *National Strategy to Combat Weapons of Mass Destruction*
<http://www.whitehouse.gov/news/releases/2002/12/WMDStrategy.pdf>
- ⁴ **Judith Miller**,
“Qaeda Videos Seem to Show Chemical Tests”,
The New York Times, 19 August 2002 Monday, p. 1A;
Dana Priest,
“Archive of Al Qaeda Videotapes Broadcast; Dogs Shown Dying from Toxic Vapor,”
The Washington Post, 21 August 2002, p. A13; and
Jack Kelley and Bill Keveney,
“Tapes of al-Qaeda Supply Evidence of Terror Plans,”
USA Today, 20 August 2002, p. 4A.
- ⁵ US Senate Report on Pre-War Intelligence on Iraq,
September 2006, p. 92
<http://intelligence.senate.gov/phaseiiaaccuracy.pdf>
- ⁶ **Hala Jaber**,
“Falluja’s Defenders Says They Will Use Chemical Weapons,”
Sunday Times (London), 31 October 2004; and
Charles J. Hanley, “Looters Said to Overrun Iraq Weapons Site,”
The Washington Post, 31 October 2004.
- ⁷ <http://www.whitehouse.gov/nsc/nss.html>
- ⁸ <http://www.whitehouse.gov/nsc/nss5.html>
- ⁹ <http://www.whitehouse.gov/news/releases/2002/12/WMDStrategy.pdf>
- ¹⁰ “Ban Ki-moon urges States to eliminate chemical and unexploded weaponry,”
5 November 2007,
<http://www.un.org/apps/news/storyAr.asp?NewsID=24529>
- ¹¹ S. Res. 525 Floor Statement: Chemical Weapons Convention, submitted by Senators Joseph Biden and Richard Lugar, 22 April 2008.
- ¹² **Jonathan B. Tucker**,
“Strengthening the CWC Regime For Transfer of Dual-Use Chemicals,”
The CBW Conventions Bulletin, no. 75, March 2007, p.1.
- ¹³ **Margaret E. Kosal**,
“Is Small Scary? Nanotechnology Research in an Age of Terrorism,”
Bulletin of Atomic Scientists, September/October 2004, 60, p. 38.
- ¹⁴ Statement of Ambassador Eric M. Javits, US Delegation to the Second Review Conference of the Chemical Weapons Convention,
7 April 2008.
- ¹⁵ **Professor Barry Kellman**,
“Biological Terrorism: US Policies to Reduce Global Biothreats”
Partnership for a Secure America,
<http://www.PSAonline.org>
- ¹⁶ http://www.armscontrol.org/act/2007_07-08/Libya.asp - Senator Lugar is attempting to restart the process with \$5m for an incinerator.
- ¹⁷ Scott Jones,
“Resolution 1540: Universalizing Export Control Standards?”
Arms control today, may 2006,
http://www.armscontrol.org/act/2006_05/1540.asp
- ¹⁸ E.g., the improvised chemical device to generate hydrogen cyanide, dubbed the “mubtakkar” device, which was described in an unclassified September 2003 US DHS Information Bulletin “Terrorist Chemical Device” for public venues, as described in
Al Baker and William Rashbaum,
“U.S. Feared Cyanide Attack on New York Subway”
NY Times, 18 June 2006,
<http://www.nytimes.com/2006/06/18/nyregion/18plot.html>
- ¹⁹ From *Combating Terrorism: Need for Comprehensive Threat and Risk Assessments of Chemical and Biological Attacks*, U.S. General Accounting Office (GAO) report. GAO/NSIAD-98-74, September 1999,
<http://www.gao.gov/cgi-bin/getrpt?GAO/NSIAD-99-163>
- ²⁰ **Richard Danzig**,



- “Catastrophic Bioterrorism—What Is To Be Done? Center for Technology and National Security Policy,” National Defense University: Washington, D.C., August 2003, 8, 9, 15
<http://biotech.law.lsu.edu/blaw/general/danzig01.pdf>
- ²¹ *The National Strategy for Homeland Security*. 2002 at <http://www.whitehouse.gov/homeland/book/>
- ²² *Securing Our Homeland*.
<http://www.dhs.gov/xabout/strategicplan>
- ²³ http://www.dhs.gov/xabout/structure/editorial_0531.shtm
- ²⁴ http://www.dhs.gov/xres/programs/editorial_0541.shtm
& <http://www.orau.gov/dhsed/2007pages/Chemical2006-10-18.pdf>
- ²⁵ http://www.dhs.gov/xres/programs/editorial_0540.shtm
Public Law 103-160, in section 1522 of title 50 United States Code.
- ²⁷ <http://www.acq.osd.mil/cp/cbdreports/tmti.pdf>
- ²⁸ <http://www.defenselink.mil/qdr/>
- ²⁹ http://www.aphl.org/programs/emergency_preparedness/chemical_terrorism/Pages/default.aspx
- ³⁰ http://www.aphl.org/programs/emergency_preparedness/chemical_terrorism/Pages/default.aspx
- ³¹ Private communications between Dr. Margaret Kosal and Chiefs of the Fire Department of New York City, Hartford CT,
- ³² **Office of the White House**,
“*The National Strategy for the Physical Protection of Critical Infrastructures and Key Assets*,”
February 2003, xii, 6, 65-66; see also
United States General Accounting Office (GAO),
“*Homeland Security: Voluntary Initiatives are Under Way at Chemical Facilities, but the Extent of Security Preparedness is Unknown*,”
GAO-03-439, March 2003.
- ³³ **U.S. Army**,
“*Draft Medical NBC Hazard Analysis of Chemical-Biological-Radiological-Nuclear-High Explosive Threat, Possible Scenarios & Planning Requirements*,”
Army Office of the Surgeon General, October 2001 cited in
United States General Accounting Office (GAO),
“*Homeland Security: Voluntary Initiatives are Under Way at Chemical Facilities, but the Extent of Security Preparedness is Unknown*”
Report to Congressional Requesters, GAO-03-439
Washington, D.C.: United States General Accounting Office,
March 2003 p. 11,
<http://www.gao.gov/cgi-bin/getrpt?GAO-03-439>, and in
Eric Pianin,
- “Study Assesses Risk of Attack on Chemical Plant,”
Washington Post, 12 March 2002, p. A8.
- ³⁴ **R. Nicholas Palarino and Robert Briggs**,
Briefing Memorandum for the hearing *Combating Terrorism: Chemical Plant Security*,
U.S. House of Representatives, Subcommittee on National Security, Emerging Threats and International Relations, 19 February 2004,
[http://reform.house.gov/UploadedFiles/Pitt Memo.pdf](http://reform.house.gov/UploadedFiles/Pitt%20Memo.pdf);
Lois Ember,
“Worst-Case Scenario for Chemical Plant Attack,”
Chemical & Engineering News, 2002, vol. 80, p. 8; and
Homeland Unsecured: The Bush Administration's Hostility to Regulation and Ties to Industry Leave America Vulnerable;
(Washington, D.C.: Public Citizen, October 2004), pp. 19-40, 63-65,
<http://www.citizen.org/documents/ACF1B7.pdf>
- ³⁵ **U.S. Senate**,
Chemical Security Act of 2002: Report to Accompany S. 1602,
Report 107-342, 15
November 2002,
<http://thomas.loc.gov>,
contains internal reference to data submitted in accordance with EPA-required Risk Management Plans (40 CFR 68).
- ³⁶ **U.S. Department of Homeland Security**,
Characteristics and Common Vulnerabilities Report for Chemical Facilities
Washington, D.C. 17 July 2003, version 1, revision 1.
- ³⁷ **Margaret E. Kosal**,
“Terrorism Targeting Industrial Chemical Facilities: Strategic Motivations and the Implications for U.S. Security,”
Studies in Conflict and Terrorism, 2006, vol 29, p.719.
- ³⁸ For vulnerability studies specific to the chemical industry, see:
GAO,
Homeland Security: Federal and Industry Efforts Are Addressing Security Issues at Chemical Facilities, but Additional Action Is Needed,
GAO-05-631T, 27 April 2005, available at:
<http://www.gao.gov/new.items/d05631t.pdf>;
Linda-Jo Schierow,
Chemical Plant Security,
Order Code RL3150, Washington, D.C.: Congressional Research Service Report, 26 July 2002, updated 20 January 2004, available at:
<http://www.fas.org/irp/crs/RL31530.pdf>;
GAO,
Homeland Security: Voluntary Initiatives are Under Way at Chemical Facilities, but the Extent of Security Preparedness is Unknown (2003);
Paul Baybutt,

- "Assessing Risks from Threats to Process Plants: Threat and Vulnerability Analysis," *Process Safety Progress*, Vol. 21 (December 2002), pp. 269-275;
Assessment of the Increased Risk of Terrorist or Other Criminal Activity Associated with Posting Off-Site Consequence Analysis Information on the Internet
Washington, D.C.: U.S. Department of Justice, 18 April 2000, available at:
<http://www.4law.co.il/600.pdf>; and
American Institute of Chemical Engineers,
"Guidelines for Analyzing and Managing the Security Vulnerabilities of Fixed Chemical Sites,"
New York: AIChE, American Center for Chemical Process Safety (CCPS), August 2003.
For two very good examples analytic models to evaluate vulnerability on a facility-by-facility basis, see:
Brian R. Dunbobbin, Thomas J. Medovich, Marc C. Murphy and Annie L. Ramsey,
"Security Vulnerability Assessment in the Chemical Industry," *Process Safety Progress*, Vol 23, No. 3 (September 2004), pp. 214-220, and
J.R. Lemley, Vasilis M. Fthenakis, and Paul D. Moskowitz,
"Security Risk Analysis for Chemical Process Facilities," *Process Safety Progress*, Vol. 22, No. 3 (September 2003), pp. 153-161.
For a more general vulnerability assessment of U.S. critical infrastructure, including chemical facilities see:
Stephen E. Flynn,
"America the Vulnerable"
Harper Collins: New York, 2004, pp. 55-56, 118-121 and
"The Edge of Disaster: Rebuilding a Resilient Nation"
Random House, New York, 2007.
- ³⁹ **Paul Baybutt and Varick Ready**,
"Protecting Porcess Plants: Preventing Terrorist Attacks and Sabotage,"
Homeland Defense Journal, Vol. 2, No. 3 (12 February 2003), pp. 1, 3-5.
For additional examples, see:
Patrick T. Ragan, Mark E. Kilburn, Stephen H. Roberts and Nathan A. Kimmerle,
"Chemical Plant Safety: Applying the Tools of the Trade to a New Risk,"
Chemical Engineering Progress, Vol. 98, No. 2 (February 2002), pp. 62-68; and
J. R. Lemley, Vasilis M. Fthenakis, Paul D. Moskowitz,
"Security Risk Analysis for Chemical Process Facilities," *Process Safety Progress*, Vol. 22 (2004), pp. 153-162.
- ⁴⁰ **Pam Witmer**,
Statement to the House Subcommittee on National Security, Emerging Threats and International Relations, Combating Terrorism: Chemical Plant Security Hearing,
23 February 2003, available at:
<http://reform.house.gov/UploadedFiles/Witmer.pdf>.
- ⁴¹ **Marsh & McLennan**,
Large Property Damage Losses in the Hydrocarbon-Chemical Industries a Thirty-Year Review
(New York: Marsh and McLennan Protection Consultants, 18th Edition, 1998).
- ⁴² **Jeff Johnston**,
"New Voices for Plant Security,"
Chemical and Energy News, Vol. 82 (22 November 2004), pp. 51-53.
- ⁴³ **Rick Hind and David Halperin**,
"Lots of Chemicals, Little Reaction,"
New York Times, 22 September 2004, p. A23.
- ⁴⁴ "Our Unnecessary Insecurity,"
New York Times, 20 February 2005, p. D8.
- ⁴⁵ **US Department of Transportation Pipeline and Hazardous Materials Safety Administration**.
<http://www.phmsa.dot.gov/>; and
US Chemical Safety and Hazard Investigation Board Safety Bulletin. No 2005-06-I-LA. June 2007.
- ⁴⁶ **Department of Transportation, Pipeline and Hazardous Materials Safety Administration**,
49 CFR Parts 172 and 174 [Docket No. RSPA-04-18730 (HM-232E)] RIN 2137-AE02,
"Hazardous Materials: Enhancing Rail Transportation Safety and Security for Hazardous Materials Shipments, Notice of proposed rulemaking (NPRM),
<http://www.epa.gov/fedrgstr/EPA-IMPACT/2006/December/Day-21/i21518.htm>
- ⁴⁷ <http://regs.dot.gov/rulemakings/200711/phmsa.htm?type=html>
- ⁴⁸ Department of Homeland Security Release.
DHS targets high risk hazardous materials in transit. 15 December 2006,
http://www.dhs.gov/xnews/releases/pr_1166200220343.shtm
- ⁴⁹ American Chemical Council Fact Sheet,
"The Business of Chemistry: Essential to Our Quality of Life and the New Economy,"
31 July 2002, available at:
<http://www.accnewsmedia.com/docs/300/241.pdf>,
and Cheryl Hogue, "Portman Picked for Trade Office,"
Chemical & Engineering News, Vol. 83 (28 March 2005), p. 8.
- ⁵⁰ The top 50 U.S. chemical companies alone emassed over \$253 billion in sales in 2004, a 23% increase from 2003.
Alexander H. Tullo,
"Top 50 Chemical Producers,"
Chemical & Engineering News, Vol. 83 (16 May 2005) pp. 17-21.
- ⁵¹ The chemical industry along with twelve other sectors, such as agriculture, energy, water, banking and finance, and public health, were identified as "critical infrastructures," in *The National Strategy for the Physical Protection of Critical Infrastruc-*



tures and Key Assets (Washington, D.C.: Office of the White House, February 2003), pp. xii, 6, 65-66, available at: http://www.dhs.gov/dhspublic/interweb/assetlibrary/Physical_Strategy.pdf.

⁶⁴ Defense Threat Reduction Agency, Former Soviet Union Threat Reduction, FY08/FY09 Budget Estimates

⁵² For this document, the definition of critical infrastructure is based on that given in the USA PATRIOT Act of 2001 (PL 107-56) and adopted in the Homeland Security Act of 2002 (PL 107-296) as "systems and assets, whether physical or virtual, so vital to the United States that incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters."

⁵³ **Thomas Homer-Dixon**,
"The Rise of Complex Terrorism,"
Foreign Policy, No. 128 (January-February 2002), pp. 52-62.

⁵⁴ http://www.dhs.gov/xprevprot/laws/gc_1166796969417.shtm

⁵⁵ **US Government Accountability Office**,
Homeland Security: DHS Is Taking Steps to Enhance Security at Chemical Facilities, but Additional Authority Is Needed, January 2006, GAO-06-150.

⁵⁶ **David Hanson**,
"DHS Speaks to Chemical Industry,"
Chemical & Engineering News 85, July 9, 2007, p. 29.

⁵⁷ **Lois Ember**,
"Chemical Plant Security,"
Chemical & Engineering News 85, April 9, 2007, p. 13.

⁵⁸ See, for example,
Joby Warrick,
"An Easier, but Less Deadly, Recipe for Terror,"
Washington Post, 31 December 2004, p. A1.

⁵⁹ "U.S. Army Destroys 50 Percent of U.S. Chemical Agent Stockpile,"
07 January 2008,
<http://www.army.mil/news/2008/01/07/6897-us-army-destroys-50-percent-of-us-chemical-agent-stockpile/>

⁶⁰ "Ground Broken on Facility to Destroy Chemical Weapons,"
Denver Post, 15 April 2008,
http://www.denverpost.com/ci_8925746?source=rss

⁶¹ http://www.pmacwa.army.mil/co/project_stages.htm and
http://www.pmacwa.army.mil/ky/project_stages.htm

⁶² "Chemical Demilitarization: Additional Management Actions Needed to Meet Key Performance Goals of DoD's Chemical Demilitarization Program"
GAO-08-134, December 2007.

⁶³ http://www.armscontrol.org/act/2007_05/CWDestruction.asp



ABOUT THE AUTHOR

Margaret E. Kosal, P.H.D.

Before joining the Sam Nunn School of International Affairs, Dr. Margaret E. Kosal was Science and Technology Advisor within the Office of the Secretary of Defense (OSD) in the Chemical and Biological Defense Program (CBDP). She also served as the first liaison to the Biological and Chemical Defense Directorate at the Defense Threat Reduction Agency (DTRA). Kosal received her doctoral degree from the University of Illinois at Urbana-Champaign (UIUC) working on biomimetic nano-structured materials and has lectured nationally and internationally on both technical and international security subjects. Along with her duties as Assistant Professor, currently she is Co-Director of the Program on Emerging Technology and Security and the Director of the Program on Biological and Chemical Nonproliferation and Counterterrorism within the Center for International Strategy, Technology, and Policy (CISTP).

In 2000, Kosal co-founded a sensor company, where she led research on biological, chemical, and explosive detection and spearheaded efforts toward the real-world applications of the technology. Previously, Kosal has held positions at Stanford University's Center for International Security and Cooperation (CISAC), Northwestern University's Feinburg School of Medicine, the Monterey Institute of International Studies' (MIIS) Center for Nonproliferation Studies (CNS), and taught at the Naval Postgraduate School (NPS). She has been recognized across the U.S. federal government for her leadership as part of the interagency Nonproliferation and Arms Control Technology Working Group, as DoD representative to the group charged with leading the National Nanotechnology Initiative, and in the NATO Nanotechnology for Defense Working Group.

She currently serves on the editorial board of Studies in Conflict and Terrorism. Her awards include the OSD Award for Excellence, 2007 UIUC Alumni Association Recent Alumni Award, the President's Volunteer Service Award, AAAS Defense Policy Fellow, and the Society of Porphyrins and Phthalocyanines Research Award. Kosal is currently completing a book exploring scenarios and strategies regarding the benefits and potential proliferation threats of nanotechnology and other emerging sciences for national security.



margaret.kosal@inta.gatech.edu

**United Automobile Aerospace and Agricultural Implement Workers of America (UAW)
American Federation of State, County and Municipal Employees (AFSCME)
United Food and Chemical Workers – United Steelworkers (USW) – Communications
Workers of America (CWA) – International Chemical Workers Union Council/UFCW
International Association of Fire Fighters (IAFF) – International Brotherhood of Teamsters
Service Employees International Union (SEIU)
Earthjustice – Environmental Defense Fund – Friends of the Earth – Greenpeace
League of Conservation Voters – Physicians for Social Responsibility – Sierra Club
U.S. Public Interest Research Group – OMB Watch – NJ Work Environment Council
Alaska Community Action on Toxics – Beyond Pesticides – Ecology Center
Center for Health, Environment and Justice – Center for International Environmental Law
Citizens' Environmental Coalition Clean New York – Clean Water Action
Connecticut Coalition for Environmental Justice – Empire State Consumer Project
Deep South Center for Environmental Justice – Environmental Health Fund
Environmental Health Strategy Center – Environmental Justice Action Group of WNY
Environmental Working Group – Green Education and Legal Fund, Inc.
Healthy Building Network – International Campaign for Justice in Bhopal
Louisiana Bucket Brigade Maine People's Alliance – National Bucket Brigade Coalition
Northwest Atlantic Marine Alliance – Oregon Center for Environmental Health
Oregon Toxics Alliance – Parents Against Lindane – Prevention Is The Cure, Inc.
Science and Environmental Health Network – Sciencecorps – Worksafe, Inc.
Silicon Valley Toxics Coalition – Strategic Counsel on Corporate Accountability
Toxics Action Center – Vermont PIRG (VPIRG) – Women's Voices for the Earth**

August 19, 2009

Dear Representative;

U.S. chemical plants remain one of the sectors of America's infrastructure most vulnerable to terrorist attacks. The Department of Homeland Security (DHS) has identified approximately 6,350 high-risk U.S. chemical facilities. As President Obama said in 2006, "these plants are stationary weapons of mass destruction spread all across the country."

The interim statute Congress passed in 2006 temporarily authorized the Chemical Facility Anti-Terrorism Standards (CFATS) which are wholly inadequate to protect the more than 100 million Americans still at risk. Although CFATS is scheduled to expire on October 4, 2009, a temporary extension in the proposed 2010 FY DHS appropriations bill will give the 111th Congress one more year to enact truly protective permanent legislation. Given the years of delay since 9/11/2001, we urge Congress to act quickly to enact a comprehensive program.

Among the fatal flaws in the "interim" statute:

--- It prohibits the DHS from requiring any specific "security measure," including the most ironclad: the use of safer and more secure chemical processes that can cost-effectively eliminate catastrophic hazards posed by poison gas.

--- It explicitly exempts thousands of chemical facilities, including approximately 2,650 water treatment facilities, some of which put major cities at risk.

--- It fails to involve plant employees in the development of vulnerability assessments and security plans or protect employees from excessive background checks.

In June, House Homeland Security Chairman Thompson (D-MS) and House Energy and Commerce Committee Chairman Waxman (D-CA) were joined by Representatives Jackson Lee (D-TX) and Markey (D-MA) in introducing the "Chemical Facility Anti-Terrorism Act of 2009" (H.R.

2868). In July, Representatives Waxman (D-CA), Markey (D-MA), Pallone (D-NJ), Sarbanes (D-MD), Schakowsky (D-IL) and Capps (D-CA) introduced the "Drinking Water System Security Act of 2009" (H.R. 3258). Taken together, H.R. 2868 and H.R. 3258 address the many flaws in the interim law. However, the chemical manufacturers lobby favors making the interim law permanent.

The price of failure could be staggering. According to a 2008 Congressional Research Service review of EPA data, 100 U.S. chemical plants each put 1 million or more people at risk. In 2004 the Homeland Security Council projected that an attack on a chemical facility would kill 17,500 people, seriously injure 10,000 more people and send an additional 100,000 people to the hospital.

The good news is that most of these hazards are preventable. Since 2001 more than 220 chemical facilities have switched to safer and more secure chemicals or processes, eliminating risks to 38.5 million Americans. Cost effective safer technologies are used in a wide variety of facilities including water treatment plants, power plants, oil refineries and other manufacturers. Many facilities, however, have yet to adopt safer technologies. Nearly eight years after the 9/11 attacks we need chemical security standards that put all high-risk facilities on an even playing field.

President Obama raised this issue in his campaign and was a leader on chemical security in the Senate. In a March 2006 floor statement, he said, "...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...Each one of these methods reduces the danger that chemical plants pose to our communities and makes them less appealing targets for terrorists."

We urge you to support H.R. 2868 and H.R. 3258 along with any strengthening amendments that ensure that the resulting program will:

- 1) Reduce the consequence of an attack through the use of available, cost-effective safer and more secure chemicals and processes
- 2) Include all categories of facilities such as water treatment plants
- 3) Involve plant employees in developing plant security programs, including participation in workplace investigations, and protect employees from excessive background checks
- 4) Ensure equal enforcement for chemical facilities and accountability for government
- 5) Allow states to set more protective security standards
- 6) Require collaboration between the DHS, EPA and other agencies to avoid regulatory redundancy, inconsistency or gaps in supply chain security.

In the face of potentially ruinous liability from a catastrophic chemical release, some business leaders agree with these solutions. In February 2008, the Association of American Railroads said, "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."

We look forward to working with you on this critical legislation.

Pam Miller
Alaska Community Action on Toxics

Cynthia Bradley
**American Federation of State, County
and Municipal Employees (AFSCME)**

Jay Feldman
Beyond Pesticides

Mike Schade
**Center for Health, Environment and
Justice**

Daryl Ditz
**Center for International
Environmental Law**

Barbara Warren
Citizens' Environmental Coalition

Kathy Curtis
Clean New York

Lynn Thorp
Clean Water Action

Dave LeGrande
**Communications Workers of America
(CWA)**

Mark A. Mitchell
**Connecticut Coalition for
Environmental Justice**

Beverly H. Wright
**Deep South Center for Environmental
Justice**

Emily Enderle
Earthjustice

Tracey Easthope
Ecology Center

Judy Braiman
Empire State Consumer Project

Richard Denison
Environmental Defense Fund

Andy Igrejas
Environmental Health Fund

Michael Belliveau
**Environmental Health Strategy
Center**

Judith M. Anderson
**Environmental Justice Action Group
of WNY**

Ken Cook
Environmental Working Group

Fred Millar
Friends of the Earth

Mark A. Dunlea
Green Education and Legal Fund, Inc.

Rick Hind
Greenpeace

Bill Walsh
Healthy Building Network

Barry Kasinitz
**International Association of Fire Fighters
(IAFF)**

LaMont Byrd
**International Brotherhood of
Teamsters**

Aquene Freechild
**International Campaign for Justice in
Bhopal**

John Morawetz
**International Chemical Workers
Union Council/UFCW**

Tiernan Sittenfeld
League of Conservation Voters

Anne Rolfes
Louisiana Bucket Brigade

Ryan Tipping-Spitz
Maine People's Alliance

Denny Larsen
National Bucket Brigade Coalition

Rick Engler
NJ Work Environment Council

Niaz Dorry
Northwest Atlantic Marine Alliance

Brian Turnbaugh
OMB Watch

Mari Anne Gest
Oregon Center for Environmental Health

Dona Hippert
Oregon Toxics Alliance

Pamela LaBrake
Parents Against Lindane

Kristen Welker-Hood
Physicians for Social Responsibility

Karen Joy Miller
Prevention Is The Cure, Inc.

Ted Schettler
Science and Environmental Health Network

Kathleen Burns
Sciencecorps

Bill Borwegen
Service Employees International Union

Ed Hopkins
Sierra Club

Lauren Ornelas
Silicon Valley Toxics Coalition

Sanford Lewis
Strategic Counsel on Corporate Accountability

Meredith Small
Toxics Action Center

Liz Hitchcock
U.S. Public Interest Research Group

Alan Reuther
United Automobile Aerospace and Agricultural Implement Workers of America (UAW)

Jo Deutch
United Food and Chemical Workers

Holly Hart
United Steelworkers (USW)

Charity Carbine
Vermont PIRG (VPIRG)

Erin Switalski
Women's Voices for the Earth

Gail Bateson
Worksafe, Inc.