



OFFICE OF INSPECTOR GENERAL

*Catalyst for Improving the Environment*

## Evaluation Report

# **U.S. Chemical Safety and Hazard Investigation Board Should Track Adherence to Closed Recommendations**

Report No. 2007-P-00010

March 26, 2007

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**Abbreviations**

CSB	U.S. Chemical Safety and Hazard Investigation Board
EPA	U.S. Environmental Protection Agency
OIG	Office of Inspector General
OMB	Office of Management and Budget
OSHA	Occupational Safety and Health Administration



# At a Glance

*Catalyst for Improving the Environment*

## Why We Did This Review

We conducted this review to determine the extent to which recipients adhere to closed safety recommendations issued by the U.S. Chemical Safety and Hazard Investigation Board (CSB).

## Background

The Clean Air Amendments of 1990 authorized CSB to be established, to investigate accidents, and determine the conditions or circumstances that led to an event in an effort to prevent future occurrences. Since it was established in 1998, through 2006, CSB issued 379 safety recommendations. The CSB has closed 164 safety recommendations directed to facilities, corporations, trade associations, and State and Federal agencies.

**For further information, contact our Office of Congressional and Public Liaison at (202) 566-2391.**

**To view the full report, click on the following link:**  
[www.epa.gov/oig/reports/2007/20070326-2007-P-00010.pdf](http://www.epa.gov/oig/reports/2007/20070326-2007-P-00010.pdf)

## ***U.S. Chemical Safety and Hazard Investigation Board Should Track Adherence to Closed Recommendations***

### **What We Found**

Recipients have continued to adhere to closed recommendations issued by CSB. Recipients cited various reasons for doing so. Most said they addressed closed recommendations because they made sense and it was the right thing to do.

Although CSB has continued to increase its investigative productivity, it does not conduct followup on closed recommendations to track adherence. As a result, CSB may be unaware of whether report recipients continue to adhere to recommended safety procedures or return to prior practices. The CSB's guidance for developing and issuing recommendations requires followup on open recommendations, but is silent regarding closed recommendations. During our review, we received feedback from recommendation recipients pertaining to improving the recommendations process. Followup on closed recommendations would give CSB an opportunity to obtain feedback from its customers that could improve CSB's practices.

### **What We Recommend**

We recommend that CSB (1) revise its guidance, Board Order 022, to include followup on closed recommendations and (2) follow up on a sample of closed recommendations every 3 years and analyze whether adherence and/or recipient conditions have changed. CSB concurred with our recommendations; however, it did not address the frequency of analyzing closed recommendations as we suggested. Per Office of Management and Budget Circular A-50, we expect that CSB's response to these recommendations will contain an action plan, with milestones, that will specify the size and frequency of closed recommendation followup. We included CSB's complete response in Appendix B.



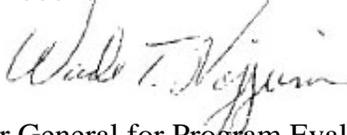
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
INSPECTOR GENERAL

March 26, 2007

**MEMORANDUM**

**SUBJECT:** U.S. Chemical Safety and Hazard Investigation Board Should Track Adherence to Closed Recommendations  
Report No. 2007-P-00010

**FROM:** Wade T. Najjum   
Assistant Inspector General for Program Evaluation

**TO:** The Honorable Carolyn W. Merritt  
Chairman and Chief Executive Officer  
U.S. Chemical Safety and Hazard Investigation Board

This is our report on the subject evaluation conducted by the Office of Inspector General (OIG), U.S. Environmental Protection Agency (EPA), of the U.S. Chemical Safety and Hazard Investigation Board (CSB). This report contains findings that describe the issues the OIG has identified and corrective actions the OIG recommends. This report represents the opinion of the OIG and does not necessarily represent the final CSB position. Final determinations on matters in this report will be made by CSB managers in accordance with established resolution procedures.

The estimated cost of this report - calculated by multiplying the project's staff days by the applicable daily full cost billing rates in effect at the time - is \$82,670.

**Action Required**

In accordance with Office of Management and Budget (OMB) Circular A-50, we anticipate a written response to our recommendations. Your response should include a corrective action plan for agreed-upon actions, including milestone dates. If the CSB and EPA-OIG are unable to reach a resolution within 180 days of the report date by the end of the semiannual reporting period, the OIG will list this report and reasons for the delayed resolution in its semiannual

report to Congress. We have no objections to the further release of this report to the public. We will make this report available at <http://www.epa.gov/oig>.

If you or your staff has any questions, please contact me at (202) 566-0832 or [najjum.wade@epa.gov](mailto:najjum.wade@epa.gov), or Jeffrey Harris, Product Line Director for Cross Media Issues, at (202) 566-0831 or [harris.jeffrey@epa.gov](mailto:harris.jeffrey@epa.gov).

# Table of Contents

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<b>Purpose</b> .....	1
<b>Background</b> .....	1
<i>Legislative Authority</i> .....	1
<i>Recommendations Process</i> .....	1
<b>Noteworthy Achievements</b> .....	2
<b>Scope and Methodology</b> .....	3
<b>Summary</b> .....	4
<i>Facilities Have Continued to Adhere to Closed Recommendations</i> .....	4
<i>The CSB Could Conduct Followup on Closed Recommendations</i> .....	4
<i>Followup Provides Opportunities for Customer Feedback</i> .....	5
<b>Recommendations</b> .....	5
<b>Agency Comments and OIG Evaluation</b> .....	5
<b>Status of Recommendations and Potential Monetary Benefits</b> .....	6

## Appendices

<b>A Detailed Listing of Recommendations in Sample</b> .....	7
<b>B Agency Response</b> .....	13
<b>C Distribution</b> .....	15

## **Purpose**

We initiated a project to evaluate how recipients adhered to closed recommendations issued by the U.S. Chemical Safety and Hazard Investigation Board (CSB).

## **Background**

### ***Legislative Authority***

Congress established the CSB through Section 112(r) (6) of the Clean Air Amendments of 1990.<sup>1</sup> The CSB started operating in 1998, to "investigate accidents to determine the conditions and circumstances which led up to the event and to identify the cause or causes so that similar events might be prevented." The Board consists of five members, including a chairperson appointed by the President of the United States. The CSB's statutory authority<sup>2</sup> states that the Board shall:

- (i) Investigate, determine, and report to the public in writing the facts, conditions, and circumstances and the cause or probable cause of any accidental release resulting in a fatality, serious injury, or substantial property damages;
- (ii) Issue periodic reports to the Congress, Federal, State, and local agencies, including EPA and the Occupational Safety and Health Administration (OSHA), concerned with the safety of chemical production, processing, handling, and storage, and other interested persons recommending measures to reduce the likelihood or the consequences of accidental releases and proposing corrective steps to make chemical production, processing, handling, and storage as safe and free from risk of injury as is possible and may include in such reports proposed rules or orders which should be issued by the Administrator or the Secretary of Labor.

The CSB's legislative authority also notes that "The Board shall coordinate its activities with investigations and studies conducted by other agencies of the United States having a responsibility to protect public health and safety," and that "The Board shall enter into a memorandum of understanding with OSHA so as to limit duplication of activities."<sup>3</sup> Following the model of the National Transportation Safety Board and the Department of Transportation, Congress directed CSB's investigative function as completely independent of the rulemaking, inspection, and enforcement authorities of EPA and OSHA.

### ***Recommendations Process***

The ultimate goal of CSB investigations is to determine the root causes of accidents, which typically result from deficiencies in safety management systems. After an incident has occurred, CSB investigators begin by conducting detailed interviews of witnesses such as plant employees, managers, and neighbors. Over a course of several months, investigators review evidence, consult with Board members, and review regulations and industry practices before drafting key

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<sup>1</sup> 42 United States Code §7412 (6).

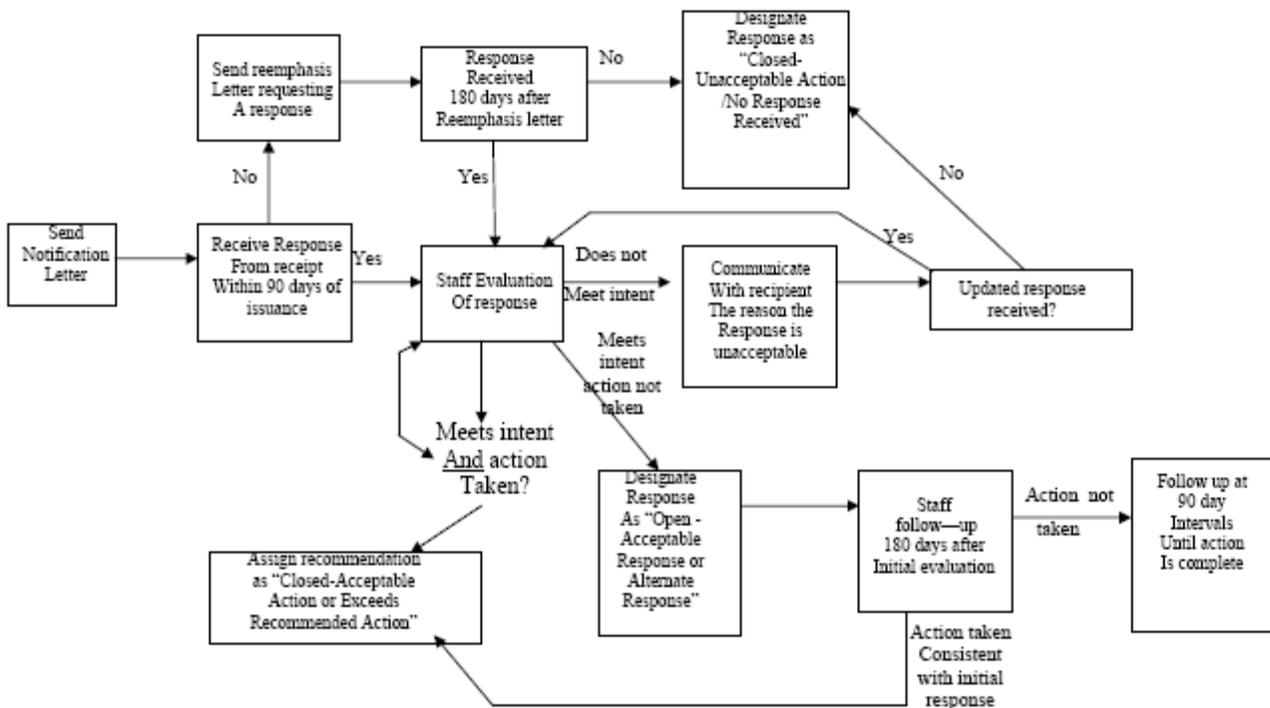
<sup>2</sup> 42 United States Code §7412 (6)(C).

<sup>3</sup> 42 United States Code §7412 (6)(E).

findings, root causes, and recommendations. The process generally takes 6 months to a year to complete, at which time investigators submit a draft report to the Board for consideration.

The CSB’s accident and hazard investigations lead to new safety recommendations that function as the Board's principal tool for achieving positive change. The CSB issues recommendations to government agencies, companies, trade associations, labor unions, and others. The CSB’s Board Order 022 establishes and defines procedures for developing, issuing, and closing recommendations (see Figure 1).

**Figure 1: Procedures for Followup on Recommendations**



Source: Appendix C from Board Order 022.

When recipients satisfactorily complete recommended actions, the Board will vote to close the recommendation. From 1998 through September 2006, the CSB completed 28 reports which contained 379 safety recommendations. In that period, CSB closed 176 of those 379 safety recommendations.

## Noteworthy Achievements

CSB has continued to increase its investigative productivity. Goal 1 of CSB’s 2004-2008 strategic plan states that CSB will produce timely, high-quality investigation reports, recommendations, and other technical products. Between August 2004 and December 2006, CSB initiated 21 new investigations and completed 15 investigations.

## Scope and Methodology

We conducted our fieldwork from October 23, 2006, to December 13, 2006, in accordance with Government Auditing Standards. To determine adherence to CSB's closed recommendations, we reviewed actions conducted by a sample of CSB investigative report recipients. We worked with CSB staff to develop a judgmental sample that encompassed the breadth of CSB's recommendation types and report recipients. Our sample included 35 closed recommendations (or 20 percent of CSB's 176 closed recommendations) issued to the following investigative report recipients: 5 facilities, 3 corporations, 4 State agencies, and 1 Federal agency. Table 1 lists the report recipients and recommendations contained in our sample, and Appendix A provides additional details on each recommendation.

**Table 1: Sample Report Recipients and Recommendations**

Investigated Incident	Recipient	Recommendations	Category
Union Carbide Nitrogen Asphyxiation Incident	Union Carbide - Taft Plant	1998-05-I-LA-R1 1998-05-I-LA-R2	Facility
Tosco Avon Refinery Petroleum Naphtha Fire	Ultramar Diamond Shamrock Golden Eagle Refinery	1998-014-I-CA-R2 1999-014-I-CA-R3 1999-014-I-CA-R4	Facility
	Tesoro Corporation	1999-014-I-CA-R1	Corporation
BP Amoco Thermal Decomposition Incident	Solvay Advanced Polymers, Augusta Facility	2001-03-I-GA-R4 2001-03-I-GA-R5 2001-03-I-GA-R6 2001-03-I-GA-R7 2001-03-I-GA-R8	Facility
	Solvay Advanced Polymers, L.L.C.	2001-03-I-GA-R2 2001-03-I-GA-R3	Corporation
Georgia Pacific Hydrogen Sulfide Poisoning	Georgia Pacific Naheola Mill	2002-01-I-AL-R5 2002-01-I-AL-R6 2002-01-I-AL-R7 2002-01-I-AL-R8 2002-01-I-AL-R9	Facility
	Georgia Pacific Corporation	2002-01-I-AL-R1 2002-01-I-AL-R2 2002-01-I-AL-R3 2002-01-I-AL-R4	Corporation
BLSR Operating Ltd. Vapor Cloud Fire	BLSR Operating	2003-06-I-TX-R8 2003-06-I-TX-R9 2003-06-I-TX-R10 2003-06-I-TX-R11	Facility
	Texas Railroad Commission	2003-06-I-TX-R14 2003-06-I-TX-R15	State Agency
Kaltech Industries Waste Mixing Explosion	New York State Department of Environmental Conservation	2002-02-I-NY-R4 2002-02-I-NY-R5	State Agency
Herrig Brothers Farm Propane Tank Explosion	Iowa State Fire Marshal	1998-007-I-IA-R3 1998-007-I-IA-R4 1998-007-I-IA-R5	State Agency
West Pharmaceutical Services Dust Explosion and Fire	North Carolina Department of Labor	2003-07-I-NC-R6	State Agency

Investigated Incident	Recipient	Recommendations	Category
Improving Reactive Hazard Management/ Reactives Hazard Study	U.S. Environmental Protection Agency	2001-01-H-R4	Federal Agency

We interviewed recipients either via phone calls or site visits and obtained records documenting whether they continued to adhere to CSB’s closed recommendations. We also asked recipients about their interactions with CSB during the reporting period and any areas for improvement in CSB’s recommendations process.

## Summary

### ***Facilities Have Continued to Adhere to Closed Recommendations***

Our analysis found that recipients adhered to closed recommendations. Recipients cited various reasons for continuing to adhere to CSB’s closed recommendations. Most recipients adhered because “it was the right thing to do” (62 percent) and/or “the recommendations made sense” (54 percent). Table 2 lists the frequency of reasons cited by recipients for continuing to adhere to CSB’s closed recommendations.

**Table 2: Recommendation Recipients’ Reasons for Continued Adherence**

Reason	Total Recipients (Percent)*
It was the right thing to do.	8 of 13 (62%)
The recommendation made sense.	7 of 13 (54%)
We would have done it anyway without CSB’s involvement.	3 of 13 (23%)
Good will (public relations standpoint).	2 of 13 (15%)
Similar action recommended by another entity.	2 of 13 (15%)
We found CSB’s report persuasive.	1 of 13 (8%)
Fear of criminal charges levied by the State.	1 of 13 (8%)

\* Results are not mutually exclusive.

### ***The CSB Could Conduct Followup on Closed Recommendations***

The CSB does not perform followup on closed recommendations. In our opinion, 42 United States Code §7412 provides ample authority for CSB to examine closed recommendations.<sup>4</sup> Board Order 022 implies that CSB can and should conduct followup activity at least every 6 months. Our Office of General Counsel concurred that CSB has no statutory prohibition against closed case followup. Reviews of correspondence between CSB and recommendation recipients suggest that CSB has continued interest in recipients’ adherence to closed recommendations. Documentation shows that CSB has previously urged recipients to contact them “if anything changes with regards to actions taken to address recommendations.” By conducting followup, CSB could develop internal or management controls to assess the sustainability of their recommendations after implementation.

<sup>4</sup> Specifically, 42 United States Code §§7412(r)(6) (C) and (F) provide the CSB authority to conduct followup on closed recommendations, as do several sections in CSB’s Board Order 022.

### ***Followup Provides Opportunities for Customer Feedback***

Following up on closed recommendations would afford CSB an opportunity to obtain important feedback from its customers that could improve CSB's management practices. During our review, recipients shared their perception that CSB's recommendations frequently suggested activities that the recipient claimed it already planned or completed. One recipient stated that it welcomed CSB's recommendations; however, it had already initiated most of the work recommended by CSB. Two recipients also stated that although they met with CSB to provide input on the appropriateness of potential recommendations, CSB did not apply that information in the final report. Recipients stated that CSB could improve its relationship with recipients and others such as OSHA by working more collaboratively. Enhanced collaboration and coordination with stakeholders could improve the recommendations process by preventing overlap and redundant actions on the part of recipients.

### **Recommendations**

We recommend that CSB:

1. Revise CSB guidance, Board Order 022, to include followup on closed recommendations.
2. Follow up on a sample of closed recommendations every 3 years and analyze whether adherence and/or recipient conditions have changed.

### **Agency Comments and OIG Evaluation**

CSB concurred with our findings regarding facility adherence to closed recommendations. Specifically, CSB's Chairman stated that she "will ask her staff to propose an amendment to Board Order 022 to include followup action on selected, major closed recommendations."

However, CSB needs to address how often it would conduct followup on closed recommendations. Per OMB Circular A-50, we expect that CSB's response to these recommendations will contain an action plan, with milestones, that will specify the size and frequency of closed recommendation followup.

## **Status of Recommendations and Potential Monetary Benefits**

RECOMMENDATIONS						POTENTIAL MONETARY BENEFITS (in \$000s) <sup>2</sup>	
Rec. No.	Page No.	Subject	Status <sup>1</sup>	Action Official	Planned Completion Date	Claimed Amount	Agreed To Amount
1	5	Revise CSB guidance, Board Order 022, to include followup on closed recommendations.	O	CSB Chairman			
2	5	Follow up on a sample of closed recommendations every 3 years and analyze whether adherence and/or recipient conditions have changed.	O	CSB Chairman			

- 1 O = recommendation is open with agreed-to corrective actions pending  
 C = recommendation is closed with all agreed-to actions completed  
 U = recommendation is undecided with resolution efforts in progress

- 2 Assessing potential monetary benefits was not an objective of this evaluation

## ***Detailed Listing of Recommendations in Sample***

Category	Report – Recipient	Recommendation
Facility	Union Carbide Taft Plant – Union Carbide	<p>1998-05-I-LA-R1: Post signs containing the warning “Danger, Confined Space: Do Not Enter Without Authorization” or similar wording at potential entryways when tanks, vessels, pipes, or other similar chemical industry equipment are opened. When nitrogen is added to a confined space, post an additional sign that warns personnel of the potential nitrogen hazard.</p> <p>1998-05-I-LA-R2: Ensure that the plant safety program addresses the control of hazards created by erecting temporary enclosures around equipment that may trap a dangerous atmosphere in the enclosure if the equipment leaks or vents hazardous material.</p>
Facility	Tosco Avon Refinery Petroleum Naphtha Fire – Ultramar Diamond Shamrock Golden Eagle Refinery	<p>1999-014-I-CA-R2: Implement a program to ensure the safe conduct of hazardous nonroutine maintenance. At a minimum, require that:</p> <ul style="list-style-type: none"> <li>• A written hazard evaluation is performed by a multidisciplinary team and, where feasible, conducted during the job planning process prior to the day of job execution.</li> <li>• Work authorizations for jobs with higher levels of hazards receive higher levels of management review, approval, and oversight.</li> <li>• A written decision-making protocol is used to determine when it is necessary to shut down a process unit to safely conduct repairs.</li> <li>• Management and safety personnel are present at the job site at a frequency sufficient to ensure the safe conduct of work.</li> <li>• Procedures and permits identify the specific hazards present and specify a course of action to be taken if safety requirements such as controlling ignition sources, draining flammables, and verifying isolation are not met.</li> <li>• The program is periodically audited, generates written findings and recommendations, and implements corrective actions.</li> </ul> <p>1999-014-I-CA-R3: Ensure that management of change reviews are conducted for changes in operating conditions, such as altering feedstock composition, increasing process unit throughput, or prolonged diversion of process flow through manual bypass valves.</p> <p>1999-014-I-CA-R4: Ensure that your corrosion management program effectively controls corrosion rates prior to the loss of containment or plugging of process equipment, which may affect safety.</p>

Category	Report – Recipient	Recommendation
Facility	BP Amoco Thermal Decomposition Incident – Solvay Advanced Polymers, Augusta Facility	<p>2001-03-I-GA-R4: Implement a program to conduct periodic management reviews of incidents and near-miss incidents. Look for trends and patterns among incidents. Address root causes and implement and track corrective measures.</p> <p>2001-03-GA-R5: Revise process safety information to include:</p> <ul style="list-style-type: none"> <li>• Information regarding the decomposition reactions of Amodel.</li> <li>• Design intent, basis, capacity, and limitations of equipment.</li> <li>• Hazards and consequences of deviations from design intent and operating limits.</li> </ul> <p>2001-03-GA-R6: Revalidate hazard analyses for the Amodel process to address:</p> <ul style="list-style-type: none"> <li>• Credible deviations from process intent and their consequences.</li> <li>• Hazards associated with startup and shutdown operations.</li> <li>• Prevention of accumulations of potentially hazardous masses of polymer.</li> </ul> <p>2001-03-I-GA-R7: Revise your lockout/tagout program to ensure that equipment is rendered safe prior to opening for maintenance. At a minimum, ensure that equipment opening procedures contain a stop work provision that requires higher levels of management review and approval when safe opening conditions, such as equipment depressurization, cannot be verified.</p> <p>2001-03-I-GA-R8: Ensure that your management of change policy applies to operational and procedural modifications.</p>
Facility	Georgia Pacific Corporation Hydrogen Sulfide Poisoning – Georgia Pacific Naheola Mill	<p>2002-01-I-AL-R5: Evaluate mill process sewer systems where chemicals may collect and react to identify potential hazardous reaction scenarios to determine if safeguards are in place to decrease the likelihood or consequences of such interactions. Evaluate sewer connections and ensure that materials that could react to create a hazardous condition are not inadvertently mixed, and that adequate mitigation measures are in place if such mixing does occur.</p> <p>2002-01-I-AL-R6: Establish programs to comply with recommendations from manufacturers of sodium hydrosulfide (NaSH) regarding its handling, such as preventing it from entering sewers because of the potential for acidic conditions.</p> <p>2002-01-I-AL-R7: Establish programs to require the proper design and maintenance of manway seals on closed sewers where hazardous materials are present.</p> <p>2002-01-I-AL-R8: Identify areas of the plant where hydrogen sulfide (H<sub>2</sub>S) could be present or generated, and institute safeguards (including warning devices) to limit personnel exposure. Institute a plan and procedures for dealing with</p>

Category	Report – Recipient	Recommendation
		<p>potential H<sub>2</sub>S releases in these areas, and require that anyone who may be present is adequately trained on appropriate emergency response practices, including attempting rescue. Require contractors working in these areas to train their employees on the specific hazards of H<sub>2</sub>S, including appropriate emergency response practices.</p> <p>2002-01-I-AL-R9: Update the Naheola mill emergency response plan to include procedures for decontaminating personnel who are brought to the first-aid station. Include specific instructions for decontaminating personnel exposed to H<sub>2</sub>S so that they do not pose a secondary exposure threat to medical personnel.</p>
Facility	BLSR Operating Ltd. Vapor Cloud Fire – BLSR Operating	<p>2003-06-I-TX-R8: Develop a written Waste Acceptance Plan as recommended by API Order No. G00004, Guidelines for Commercial Exploration and Production Waste Management Facilities.</p> <ul style="list-style-type: none"> <li>• Require the shipper or carrier to properly classify the flammability hazard of exploration and production (E&amp;P) waste liquids.</li> <li>• Require the hauler to provide information that identifies the flammability hazard of the material before accepting the load, such as a material safety data sheet (MSDS).</li> </ul> <p>2003-06-I-TX-R9: Develop and implement written procedures and provide training to employees on the safe handling of all waste liquids delivered to the facility in accordance with API Order No. G00004, Guidelines for Commercial Exploration and Production Waste Management Facilities; and API RP-2219, Safe Operation of Vacuum Trucks in Petroleum Service.</p> <ul style="list-style-type: none"> <li>• Include requirements for proper grounding of trucks and eliminating other sources of ignition (e.g., facility electrical equipment and smoking in unloading areas).</li> <li>• Ensure that the material is presented in languages or formats that are clearly understood by all affected personnel.</li> </ul> <p>2003-06-I-TX-R10: Develop written procedures and provide training to employees on unloading all flammable or potentially flammable E&amp;P waste liquids.</p> <ul style="list-style-type: none"> <li>• Avoid unloading flammable liquids onto an open work area, such as the mud disposal and washout pad.</li> <li>• Include alternative unloading method(s), such as using a closed piping system to minimize vapor generation.</li> <li>• Ensure that the material is presented in languages or formats that are clearly understood by all affected personnel.</li> </ul> <p>2003-06-I-TX-R11: Develop written emergency procedures and provide training to employees on response to abnormal or emergency situations, including uncontrolled flammable vapor releases that can result in a fire or explosion hazard. Ensure that the material is presented in languages or formats that are clearly understood by all affected personnel.</p>

Category	Report – Recipient	Recommendation
Corporation	Tosco Avon Refinery Petroleum Naphtha Fire – Tosco Corporation (Ultramar Diamond Shamrock facility sold to Tesoro Corporation)	<p>1999-014-I-CA-R1: Conduct periodic safety audits of your oil refinery facilities in light of the findings of this report. At a minimum, ensure that:</p> <p>Audits assess the following:</p> <ul style="list-style-type: none"> <li>• Safe conduct of hazardous non-routine maintenance.</li> <li>• Management oversight and accountability for safety.</li> <li>• Management of change program.</li> <li>• Corrosion control program.</li> <li>• Audits are documented in a written report that contains findings and recommendations and is shared with the workforce at the facility.</li> <li>• Audit recommendations are tracked and implemented.</li> </ul>
Corporation	BP Amoco Thermal Decomposition Incident – Solvay Advanced Polymers, L.L.C.	<p>2001-03-I-GA-R2: Ensure that a program is in place at facilities acquired from BP Amoco Performance Polymers to systematically review the hazards associated with new and modified processes and equipment as operating experience accrues. Ensure that facilities correct all identified design, operation, and maintenance deficiencies. Verify that operating experience does not invalidate the design basis for equipment.</p> <p>2001-03-I-GA-R3: Revise the Material Safety Data Sheet (MSDS) for Amodel to warn of the hazards of accumulating large masses of molten polymer. Communicate the MSDS changes to current and past customers (who may retain inventories of this product).</p>
Corporation	Georgia Pacific Corporation Hydrogen Sulfide Poisoning – Georgia Pacific Corporation	<p>2002-01-I-AL-R1: Conduct periodic safety audits of Georgia-Pacific pulp and paper mills in light of the findings of this report. At a minimum, ensure that management systems are in place at the mills to:</p> <ul style="list-style-type: none"> <li>• Evaluate process sewers where chemicals may collect and interact, and identify potential hazardous reaction scenarios to determine if safeguards are in place to decrease the likelihood or consequences of such interactions. Take into account sewer system connections and the ability to prevent inadvertent mixing of materials that could react to create a hazardous condition.</li> </ul> <p>2002-01-I-AL-R2: Conduct periodic safety audits of Georgia-Pacific pulp and paper mills in light of the findings of this report. At a minimum, ensure that management systems are in place at the mills to:</p> <ul style="list-style-type: none"> <li>• Identify areas of the mill where hydrogen sulfide (H<sub>2</sub>S) could be present or generated, and institute safeguards (including warning devices) to limit personnel exposure. Require that personnel working in the area are trained to recognize the presence of H<sub>2</sub>S and respond appropriately. Update emergency response plans for such areas to include procedures for decontaminating personnel exposed to toxic gas.</li> </ul>

Category	Report – Recipient	Recommendation
		<p>2002-01-I-AL-R3: Conduct periodic safety audits of Georgia-Pacific pulp and paper mills in light of the findings of this report. At a minimum, ensure that management systems are in place at the mills to:</p> <ul style="list-style-type: none"> <li>Apply good engineering and process safety principles to process sewer systems. For instance, ensure that hazard reviews and management of change (MOC) analyses are completed when additions or changes are made where chemicals could collect and react in process sewers. (Such principles may be found in publications from the Center for Chemical Process Safety [CCPS].)</li> </ul> <p>2002-01-I-AL-R4: Communicate the findings and recommendations of this report to the workforce and contractors at all Georgia-Pacific pulp and paper mills.</p>
Government	BLSR Operating Ltd. Vapor Cloud Fire – Texas Railroad Commission	<p>2003-06-I-TX-R14: Require that all permitted drillers and producers identify and document (e.g., material safety data sheet [MSDS]) the potential flammability hazard of exploration and production (E&amp;P) waste liquids. Provide the information to workers and contractors in languages clearly understood by the recipients.</p> <p>2003-06-I-TX-R15: Provide information (e.g., safety bulletin) to industry on the potential flammability hazard associated with basic sediment and water (BS&amp;W) and other E&amp;P waste liquids.</p> <ul style="list-style-type: none"> <li>Waste liquids can contain sufficient hydrocarbons to be classified as flammable liquids.</li> <li>The waste liquid removal method can result in removing significant quantities of flammable hydrocarbon product such that the mixture in the transport container may require classification as a flammable liquid under Occupational Safety and Health Administration (OSHA) or U.S. Department of Transportation (DOT) regulations.</li> </ul>
Government	Kaltech Industries Waste Mining Explosion – New York State Department of Environmental Conservation	<p>2002-02-I-NY-R4: Raise the priority of inspections of large quantity generators located in mixed-occupancy facilities within densely populated areas.</p> <p>2002-02-I-NY-R5: Share data, such as the Resource Conservation and Recovery Act (RCRA) biennial report, with the New York City Fire Department (FDNY) and Department of Environmental Protection (NYCDEP) concerning the identity, location, and hazardous waste inventories of large quantity generators within the City to enhance inspection and enforcement activities.</p>
Government	Herrig Brothers Farm Propane Tank Explosion – Iowa State Fire Marshall	<p>1998-007-I-IA-R3: Develop a program to ensure implementation of the requirements of the National Fire Protection Association's NFPA-58 Standard for the Storage and Handling of Liquefied Petroleum Gases, as adopted by Iowa law. Ensure that this program includes, at a minimum the following element:</p> <ul style="list-style-type: none"> <li>Designation by regulation of the party (such as a facility owner or installer) who is responsible for submitting planned construction or modification documents to the State Fire Marshall.</li> </ul>

Category	Report – Recipient	Recommendation
		<p>1998-007-I-IA-R4: Develop a program to ensure implementation of the requirements of the National Fire Protection Association's NFPA-58 Standard for the Storage and Handling of Liquefied Petroleum Gases, as adopted by Iowa law. Ensure that this program includes, at a minimum, the following elements:</p> <ul style="list-style-type: none"> <li>• Procedures for approving the plans for new or modified installations.</li> </ul> <p>1998-007-I-IA-R5: Develop a program to ensure implementation of the requirements of the National Fire Protection Association's NFPA-58 Standard for the Storage and Handling of Liquefied Petroleum Gases, as adopted by Iowa law. Ensure that this program includes, at a minimum, the following elements:</p> <ul style="list-style-type: none"> <li>• Procedures governing the issuance and posting of permits authorizing the use of equipment.</li> </ul>
Government	West Pharmaceuticals Services Dust Explosion and Fire – North Carolina Department of Labor	2003-07-I-NC-R6: Identify the manufacturing industries at risk for combustible dust explosions, and develop and conduct an outreach program on combustible dust hazards.
Government	Reactivities Hazard Investigation/Reactivities Hazard Study – U.S. Environmental Protection Agency	2001-01-H-R4: Modify the accident reporting requirements in RMP Info to define and record reactive incidents. Consider adding the term "reactive incident" to the four existing "release events" in EPA's current 5-year accident reporting requirements (Gas Release, Liquid Spill/Evaporation, Fire, and Explosion). Structure this information collection to allow EPA and its stakeholders to identify and focus resources on industry sectors that experienced the incidents; chemicals and processes involved; and impact on the public, the workforce, and the environment.

**U.S. Chemical Safety and  
Hazard Investigation Board**

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Board Member



March 9, 2007

Bill A. Roderick  
Acting Inspector General  
U.S. Environmental Protection Agency  
1200 Pennsylvania Ave, NW (2410T)  
Washington, DC 20460

Dear Acting Inspector General Roderick:

My staff and I have reviewed your draft evaluation report on adherence to closed recommendations. We were pleased to learn that you found 100 percent adherence to the closed recommendations. In addition, we were pleased to see the majority of recipients you contacted thought the Chemical Safety and Hazard Investigation Board (CSB) recommendations made sense and were “the right thing to do”. We strive to make our recommendations practical, feasible, and meaningful ways to improve safety. Your evaluation results demonstrate the powerful and lasting effect the CSB’s work has on safety.

I will ask my staff to propose an amendment to Board Order 022, CSB Recommendation Program, to include follow-up action on selected, major closed recommendations. The goal will be to conduct periodic evaluation of the impacts of these selected recommendations. Recommendations chosen for evaluation will be those with clear potential to reduce risks for issues of national importance, such as widespread risks in the chemical industry. I believe this targeted approach will maximize the value of our follow-up consistent with the intent of your recommendation. Of course, this commitment would require and be contingent upon some additional staff resources, and depending upon the nature of the follow-up, paperwork reduction act clearances from OMB.

If you or your staff has any questions regarding this response, please contact Bea Robinson, audit liaison, at 202-261-7627. I thank you and your staff for your efforts on this evaluation.

Sincerely,

/s/

Carolyn W. Merritt  
Chairperson & CEO

## ***Distribution***

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