

U.S. CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD

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PUBLIC BOARD MEETING

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TUESDAY,

SEPTEMBER 17, 2002

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HOUSTON, TEXAS

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The Board met at the Hilton Hotel, Moody Ballroom, 8181 Airport Boulevard, Houston, Texas, at 9:00 a.m., Carolyn Merritt, Chair, presiding.

BOARD MEMBERS:

CAROLYN MERRITT Chair
JOHN BRESLAND
DR. GERALD POJE
DR. IRV ROSENTHAL
DR. ANDREA K. TAYLOR

CHARLES JEFFRESS, Chief Operating Officer
CHRISTOPHER WARNER, General Counsel

STAFF PRESENT:

JOHN MURPHY
LISA LONG
GIBY JOSEPH
DONALD HOLMSTROM

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<u>AGENDA ITEM</u>	<u>PAGE</u>
Opening statements	
Ms. Carolyn Merritt	3
Dr. Gerald Poje	10
John Bresland	13
Reactive Hazards Investigation Report	
Charles Jeffress	14
John Murphy	15
Lisa Long	26
Giby Joseph	39
Recommendations	
Donald Holmstrom	57
Public Comment	
Glen Irwin	90
Alan Goss	93
Roby Plemons	94
Jeff Kuper	96
George Freda	98
Marc Levin	100
Discussion and Vote - Reactives Report	103
Discussion and Vote - FY 2003 Action Plan	156

P-R-O-C-E-E-D-I-N-G-S

(9:00 a.m.)

CHAIR MERRITT: The meeting will come to order. This is a regular board meeting for the U.S. Chemical Safety Board, which is being held in public.

I welcome you to our meeting, and good morning.

This is the U.S. Chemical Safety and Hazard Investigation Board. The board is an independent and nonregulatory federal agency that investigates the causes of chemical accidents and recommends safety improvements to prevent future accidents.

I'm Carolyn Merritt; I'm the chairman of the board. And with me today are my fellow board members Dr. Gerry Poje, Dr. Andrea Taylor, Dr. Irv Rosenthal, and Mr. John Bresland. Also with us is Mr. Charles Jeffress, who is our chief operating officer; and Mr. Christopher Warner, who is our general counsel; and also members of our staff, and I greet you all this morning.

This public meeting is also being webcast live, and I extend a welcome to our viewers over the worldwide web. This marks the board's first public meeting in the state of Texas, and it's a privilege to be back into my hometown here -- or former home -- of

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1 Houston, of which I was here for about four years, and
2 it's always a pleasure to be back.

3 This May the board began its public
4 accident investigation in Texas of the plant fire in
5 Pearland at Third Coast Industries' facility. We
6 anticipate completing our Third Coast investigation
7 this winter, so we'll probably be back shortly.

8 Today we address a most important
9 challenge facing the industry here in Texas, but also
10 throughout the country: the problem of managing
11 hazards associated with chemical reactivity.

12 Our investigation of reactive hazards
13 marks an important milestone for the board. It
14 represents our first effort, since we opened our doors
15 in 1998, at not just examining the cause of a single
16 accident that's already occurred, but rather looking
17 prospectively at the whole class of hazards and
18 recommending steps to prevent future accidents across
19 a broad range of industries.

20 With this study we begin to realize the
21 vision of Congress when it first authorized creation
22 of the board in 1990. Reactive hazards have been
23 responsible for many accidents, deaths, and injuries
24 over the last years.

25 Plants have been damaged or destroyed by

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1 explosions, fires; jobs have been lost, productivity,
2 capacity has been lost.

3 When we talk about reactive accidents,
4 we're generally referring to two kinds of incidents:
5 one, planned chemical reactions that go awry because
6 of unusual or uncontrolled conditions and, two,
7 reactions caused by inadvertent mixing of materials.

8 Three of the five costliest reactive
9 accidents nationally in the past 20 years happened
10 here in Texas or in Louisiana. Property losses from
11 these three events totaled more than \$200 million, a
12 steep price to pay for accidents that could have been
13 prevented inexpensively with better-managed safety
14 systems.

15 These eye-opening figures are just the
16 direct costs of the accidents and don't include sudden
17 and prolonged capital drain, business interruption,
18 loss of market share, or legal costs.

19 The pictures outside of the room show the
20 level of destruction that reactive accidents have
21 caused in Texas and around the country. Companies
22 that are predictive, proactive, and preventive have
23 long recognized the return on investment in avoiding
24 accidents and have voluntarily instituted broad and
25 effective safety programs that exceed government

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1 requirements.

2 Companies directly benefit from such
3 programs at the bottom line. They also avoid the loss
4 of life, the human suffering, and the public mistrust
5 and financial toll that accidents can cause.

6 Houston residents have frequent reminders
7 of frightening effects of chemical accidents: toxic
8 clouds, evacuations, road closures, shelters in place.

9 The explosion at Freeport's BASF plant on
10 Friday is but another of the latest examples of
11 chemical accidents with ominous potential.

12 Today we're meeting a short drive from the
13 site of one of the worst US chemical accidents in
14 decades: the ARCO Channelview disaster. On the
15 evening of July 5, 1990, maintenance workers were
16 completing repairs near a large liquid waste tank at
17 the Channelview complex.

18 Unknown to plant personnel, the chemical
19 reaction within the tank had produced a highly
20 explosive fuel oxygen atmosphere. At 11:21 p.m.
21 explosive fumes from the tank reached outside ignition
22 source. Moments later the entire 900,000-gallon tank
23 exploded, hurling its massive 24-ton roof into the
24 parking lot 600 feet away.

25 All 17 workers in the area were killed, and the area

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1 the size of a city block was devastated.

2 Two more accidents caused by chemical
3 reactions at Phillips Chemical Company in Pasadena
4 resulted in three deaths and more than 70 injuries in
5 1999 and 2000.

6 Several men who survived one of these
7 accidents but were injured are here with us in the
8 audience today: Alan Goss, Roby Plemons, and Jeff
9 Kuper are all here.

10 (Applause.)

11 CHAIR MERRITT: And we thank you for being
12 here this morning.

13 The Clean Air Act amendments of 1990
14 require OSHA and EPA to develop new regulatory
15 standards for the chemical industry. The OSHA process
16 safety management standards took effect in 1992, and
17 the EPA risk management program rule took effect in
18 1996.

19 These rules require companies to use a
20 variety of good safety practice for covered chemical
21 processes. The regulations require companies to
22 identify process hazards, assess their significance,
23 and implement control programs designed to prevent
24 accidents.

25 These rules have a central limitation:

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1 They only apply to processes using certain listed
2 individual chemicals and classes of chemicals. They
3 do not comprehensively cover reactive hazards
4 associated with process-specific conditions and
5 combinations of chemicals.

6 It is precisely these hazards which are
7 often subtle and random dangers that, nonetheless,
8 lead to catastrophic reactive accidents.

9 The Chemical Safety Board staff has now
10 completed a two-year special investigation on the
11 management of reactive hazards. As part of their
12 study, the staff has collected information on 167
13 serious reactive accidents that occurred in 38 US
14 states between 1980 and 2001.

15 Twenty-three serious reactive accidents
16 occurred in the state of Texas. That's more than
17 double any other state in the union. More than half
18 of the accidents in the CSB study happened after the
19 OSHA process safety rules were put in place in 1992.

20 The board released preliminary staff
21 findings from the study this spring. On May 30 we
22 took a full day of public comment and testimony in
23 Patterson, New Jersey, which has been the scene of two
24 major reactive accidents in recent years.

25 You may view a video of that proceeding by

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1 going to our CSB website at www.chemsafety.gov. The
2 Chemical Safety Board has continued to collect written
3 comment from the public, and the comments and
4 testimony have been used in developing proposed final
5 conclusions and safety recommendations.

6 This morning the CSB staff will present
7 these conclusions and recommendations to the full
8 board, and board members will have a chance to ask
9 questions of the staff.

10 The public will have an opportunity to
11 offer comments but not questions to the staff or the
12 board before the board moves on to deliberate and then
13 vote on the report with any approved amendments.

14 Members of the public who wish to comment
15 should register at the sign-in desk out front, and
16 please limit your remarks to three minutes.

17 After voting on the reactive report and
18 its recommendations, the board will then move on to
19 consider some routine business which you're welcome to
20 stay and view as well, including our new performance
21 plan for the next year. We plan to adjourn around
22 lunchtime.

23 There has been considerable work done on
24 this reactive hazards prior to the confirmation of
25 John Bresland and myself in August.

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1 This work, done by Dr. Poge, Dr.
2 Rosenthal, and Dr. Taylor, may not be fully
3 appreciated in these proceedings, but I would like to
4 offer my gratitude for your perseverance and for your
5 dedication to this issue to bring us to this point
6 today. And we thank you.

7 With that, the chair will recognize any
8 other members of the board who would like to offer
9 opening statements.

10 Anyone? Dr. Poje?

11 DR. POJE: Thank you, Madam Chair, for
12 those thoughtful and kind opening remarks. Thanks
13 also to the staff and my fellow board colleagues for
14 your efforts.

15 I'm grateful to the many wise and generous
16 people who shared so much expertise with us during the
17 course of this investigation.

18 This past week has been a sober and somber
19 one for so many Americans. As a native New Yorker now
20 living and working in Washington, DC, the 9/11
21 anniversary has revived many painful memories of
22 Ground Zero in Manhattan and the Pentagon in northern
23 Virginia.

24 However, knowing that the board would soon
25 bring our reactivities hazard investigation to Houston

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1 also evoked memories of an earlier tragedy that lies
2 at the heart of chemical process safety and our study.

3 I'd ask everyone to recall, in the early
4 morning hours of December 3, 1984, pressurized methyl
5 isocyanate burst through safety valves of a large
6 storage tank at the Union Carbide plant in Bhopal,
7 India, releasing more than 30 metric tons of a highly
8 toxic gas into the air.

9 The dense cloud quietly spread like a
10 white pall over the nearby sleeping community. Many
11 men, women, and children died in their beds. Others
12 awoke to the sounds of their own choking as they
13 struggled to escape into the streets.

14 Those able to flee could only run so far
15 before collapsing in the streets and writhing on the
16 ground, engulfed in the vapor. Within days, when the
17 air finally cleared, more than 3000 people lay dead,
18 and scores of thousands were permanently disabled.

19 Exothermic polymerization of methyl
20 isocyanate in the tank had been inhibited by the
21 addition of phosgene; however, about 500 kilograms of
22 water entered the MIC tank in Bhopal and reacted with
23 and deactivated the phosgene, producing carbon
24 dioxide, and raising the temperature of the MIC.

25 The tank was also equipped with a cooling

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1 system, but the refrigeration system was not working.
2 Furthermore, the tank high temperature alarm was
3 disconnected at the time of the accident.

4 By consuming the phosgene and heating the
5 MIC in the unrefrigerated tank, this precursor
6 reaction led to a runaway MIC polymerization and
7 venting of this deadly gas into the heavily populated
8 area surrounding the pesticide-manufacturing plant.

9 Inadequate safety systems at the plant
10 failed to prevent a runaway reaction and to contain
11 the deadly cloud.

12 Bhopal's ripple effect was enormous and
13 felt around the world. In America many chemical
14 manufacturers redesigned processes in inherently safer
15 ways to avoid storage of such highly hazardous
16 intermediate chemicals.

17 Professional engineers established the
18 Center for Chemical Process Safety that prepared best-
19 practice guidances for the industry.

20 Other safety leaders initiated development
21 of an OSHA process safety policy. Congress expanded
22 right-to-know policies from workplaces to communities
23 and instituted new emergency planning and preparedness
24 requirements through EPA.

25 Multiple domestic chemical accidents in

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1 the late 1980s, including many reactive incidents,
2 prompted the Clean Air Act amendments of 1990 that
3 ultimately established OSHA PSM regulations by 1992,
4 led to EPA's risk management program by 1996, and
5 prompted creation of the Chemical Safety Board by
6 1998.

7 Today, after recent tragic events, we find
8 ourselves in new age of chemical safety and security.

9 Once again we will need to strengthen safety on a
10 number of fronts, reforming regulatory policy,
11 improving information gathering and access, developing
12 professional guidance, improving private practice, and
13 increasing awareness.

14 I'm honored to be here today as part of
15 this board as we take the next steps to prevent
16 reactive chemical accidents. Thank you.

17 CHAIR MERRITT: Is there anyone else?

18 MR. BRESLAND: Yes, Madam Chairman.

19 It's my pleasure to be back in Texas,
20 which I believe is the home of the largest
21 concentration of chemical and oil refining processes
22 in the world.

23 Our topic today is of great interest to
24 everybody in the chemical processing industry, and as
25 a recently confirmed CSB board member, I'm looking

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1 forward to a very interesting and stimulating
2 discussion today.

3 Thank you.

4 CHAIR MERRITT: Thank you.

5 Anyone else?

6 (No response.)

7 CHAIR MERRITT: Thank you. With that, at
8 this point in our board meeting I would like to call
9 Charles Jeffress and ask him to proceed, then, with
10 the staff presentation to the board.

11 MR. JEFFRESS: Thank you, Madam Chair. As
12 you indicated, a team of members from the Chemical
13 Safety Board has been working on this study of
14 reactive chemical incidents for the past two years,
15 and that team is here to make a presentation of their
16 recommendations to you today.

17 They will present their conclusions, their
18 findings, and their recommendations. The leader of
19 that team is John Murphy, who will start the
20 presentation this morning; also on the team, Lisa
21 Long, Giby Joseph, and Don Holmstrom, a member of the
22 team and the recommendations specialist for the
23 agency, participated in developing the
24 recommendations.

25 To begin the presentation this morning,

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1 John?

2 MR. MURPHY: Thank you, Mr. Jeffress.

3 Good morning, Madam Chair, board members,
4 Mr. Jeffress, Mr. Warner.

5 My name is John Murphy. I am the lead
6 investigator on the reactive chemical hazard
7 investigation. With me this morning are Giby Joseph
8 and Lisa Long, fellow investigators; and Don Holmstrom
9 from our recommendations group.

10 This is a presentation to the board of the
11 findings, conclusions, and recommendations of the
12 reactive chemical hazard investigation.

13 Board members, reactive chemical incidents
14 are a significant safety problem. Reactive chemical
15 incidents have resulted in fires, explosions, in toxic
16 releases. Such events have injured people, damaged
17 property, and caused adverse environmental impact.

18 As Madam Chair has already told you, there
19 have been severe reactive chemical incidents right
20 here on the Gulf Coast. On March 27, 2000, Phillips
21 Chemical Company in Pasadena, Texas, a shock-sensitive
22 material exploded and resulted in one fatality and
23 many serious injuries. Local residents had to shelter
24 in place for more than two hours, and there was major
25 property damage.

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1 Another incident occurred here in Texas on
2 June 23, 1999, Phillips Chemical in Pasadena, Texas.
3 Operators were mixing a mini-batch of production
4 chemicals to ensure that the reaction was running
5 correctly. Evidence shows that valves were operated
6 out of sequence, allowing 40 times the amount
7 specified of a highly volatile chemical known as
8 butadiene to pour into the reactor.

9 Operators then introduced a catalyst, a
10 procedure that had not been done for about six years,
11 to try to get rid of the odor. Soon after the
12 catalyst addition, a vapor cloud escaped and exploded,
13 resulting in two fatalities.

14 Reactive chemical incidents can be
15 catastrophic. On April 21, 1995, in Lodi, New Jersey,
16 there was an incident at Napp Technologies. An
17 explosion and fire occurred when Napp was conducting a
18 blending operation to produce a commercial
19 precipitation agent.

20 The chemicals in the process were water
21 reactive. During the process water was inadvertently
22 introduced into the blender. Operators noticed an
23 unexpected reaction taking place in the blender,
24 producing heat and the release of foul-smelling gas.

25 During an emergency operation to unload

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1 the blender of its reacting contents, the material
2 ignited, and an explosion occurred which resulted in
3 the deaths of five Napp employees and the destruction
4 of the facility.

5 The chemicals involved in this incident
6 were not covered by the OSHA process safety management
7 standard.

8 The importance of this incident is that
9 six labor unions, after the incident, petitioned OSHA
10 for an emergency revision of the process safety
11 management standard, stating that it failed to cover
12 reactive chemicals adequately.

13 OSHA and EPA, who also investigated the
14 incident, also stated that reactive coverage needed to
15 be relooked at.

16 To date there have been no regulatory
17 changes to address the process safety management
18 issue. In fact, OSHA has recently removed reactive
19 chemicals from its regulatory agenda.

20 Another important incident took place on
21 April 8, 1998, in Patterson, New Jersey, at Morton
22 International. The Chemical Safety Board investigated
23 this incident and determined that a runaway reaction
24 resulted in a fire and explosion that injured nine
25 employees.

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1 During the Chemical Safety Board
2 investigation of the Morton incident, many
3 stakeholders raised concerns that reactive chemical
4 problems merited a more systematic analysis by the
5 board.

6 In light of the number of incidents
7 similar to Morton that have occurred since 1995, the
8 board decided to conduct a hazard investigation of
9 reactive chemicals. The board had the following
10 objectives for the hazard investigation. I will let
11 you read them.

12 The objectives were met by analyzing past
13 incidents, discussions with stakeholders and
14 regulators, site visits and surveys of chemical
15 companies, and examining existing standards and
16 guidance.

17 The investigative process resulted in
18 recommendations to improve reactive hazard management.

19 You will be hearing these recommendations at the end
20 of the presentation.

21 Many interested groups inputted into the
22 hazard investigation. We had representation from
23 academia, industry trade associations, labor unions,
24 and public interest groups, and good participation by
25 regulatory agencies.

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1 I would like to thank each of them for the
2 contribution to the hazard investigation. Diversity
3 of input was very important to doing a thorough
4 investigation.

5 As Madam Chair has already stated, a
6 public hearing on reactive chemical hazards was held
7 May 30, 2002, in Patterson, New Jersey. There were
8 presenters from government, industry, labor, public
9 interest groups, and technical experts.

10 For 30 days after the meeting public
11 comments were accepted. Public comments were received
12 from individuals, companies, industry trade
13 associations, unions, and consultants.

14 There were many topics covered in the
15 public comments. One important topic was, was there a
16 need for regulation? If so, what would the regulation
17 look like? Should it be prescriptive or performance-
18 based?

19 Also, specific changes were recommended to
20 the process safety management standard. There was
21 discussion on the value of industry initiatives and
22 guidance and whether changes had to be made.

23 All comments were reviewed and seriously
24 considered before recommendations were formulated.
25 The comments confirmed and elaborated on ideas that

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1 the staff had already concluded.

2 This was primarily due to the fact that
3 many of these groups were interactive during the
4 hazard investigation. I would like to thank all of
5 those who submitted public comments.

6 One of the first tasks of the staff was to
7 define a reactive chemical incident. We did this after
8 thorough discussion with many of the stakeholders
9 mentioned previously. The following definition was
10 agreed to: A reactive chemical incident is a sudden
11 event involving an uncontrolled chemical reaction with
12 significant increases in temperature, pressure, or gas
13 evolution that has the potential to or has caused
14 serious harm to people, property, or the environment.

15 This concludes the introduction. I am now
16 going to go on and start the discussion of the
17 conclusions. I will discuss conclusion number 1.
18 Lisa Long and Giby Joseph will follow with the rest of
19 the conclusions.

20 The investigative process led to the
21 following conclusions:

22 Conclusion number 1: Reactive incidents
23 are a significant safety problem. Limited data
24 available to the Chemical Safety Board includes 167
25 industrial incidents in the United States involving

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1 uncontrolled chemistry since 1980.

2 Forty-eight of these incidents involved a
3 total of 108 fatalities to workers and the public.
4 The data include an average of six injury-related
5 incidents per year, resulting in five fatalities per
6 year.

7 About 50 incidents of the 167 incidents
8 had public impact. By public impact we meant there
9 was death, injury, public evacuation or shelter in
10 place.

11 This is not a comprehensive examination of
12 reactive incidents. As you will learn later, we had
13 problems finding sufficient and adequate public
14 information sources. This will be discussed further
15 later on. For example, oftentimes it was difficult
16 from the information to determine whether an incident
17 was caused by uncontrolled reactivity.

18 Reactive incidents have resulted in severe
19 consequences. The following two slides list incidents
20 that resulted in three or more fatalities. Several of
21 these will be discussed in some detail during the rest
22 of the presentation. Several serious incidents have
23 occurred in Texas, as has been already stated.

24 This slide illustrates that reactive
25 incidents have occurred recently and continue to

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1 occur. In fact, the Chemical Safety Board is
2 currently investigating the Pennington, Alabama,
3 incident and another reactive chemical incident that
4 took place in New York City.

5 I will now pause briefly for a few
6 questions from the board on subject matters that I've
7 covered today.

8 CHAIR MERRITT: Dr. Taylor?

9 DR. TAYLOR: John, I have two questions,
10 and one of them is related to the public comments.
11 Can you expound on how public comments were used,
12 again, in formulating the recommendations a little bit
13 more, please.

14 MR. MURPHY: The staff reviewed all public
15 comments in detail. They were summarized, and during
16 the process of formulating recommendations, they were
17 very useful in making sure that all alternatives were
18 evaluated.

19 Most of the comments were not new to us,
20 but some of them had enough detail that they were very
21 useful in finalizing recommendations. So like I said
22 before, I thank all those that inputted during the
23 public comment period.

24 DR. TAYLOR: Thank you. Now, my second
25 question goes back to the conclusion that you reached

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1 from the incidents that were recorded since 1980 that
2 you were able to find.

3 It says that reactive incidents are a
4 significant chemical safety problem, and there were
5 108 fatalities -- 48 of the incidents resulted in 108
6 fatalities to workers and the public, and 50 incidents
7 with public impact, and an average of five fatalities
8 per year.

9 Now, my question to you -- in the
10 investigation that you conducted, how significant are
11 the reactive incidents that have occurred in the
12 chemical industry as compared to other incidents that
13 may have occurred in the same sector?

14 MR. MURPHY: We didn't examine other type
15 of chemical accidents in detail. The staff concluded,
16 though, that five fatalities per year is significant,
17 and 50 incidents affecting the public are significant.

18 We think probably our data sources are not adequate,
19 and perhaps these numbers could be understated.

20 I think the important thing to realize, as
21 I pointed out during my presentation, that these
22 incidents can be catastrophic; when they do occur,
23 they can be multiple fatalities, serious economic
24 impact, and environmental impact.

25 The other thing I might mention is my

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1 discussion with the chemical industry process safety
2 leaders. Reactive chemical incidents are a
3 significant safety problem in the eyes of the chemical
4 industry, and so I think there's no doubt that
5 everybody considers reactive chemical incidents a
6 serious safety problem.

7 DR. TAYLOR: Thank you.

8 CHAIR MERRITT: Dr. Rosenthal?

9 DR. ROSENTHAL: John, in both the Napp and
10 the Pasadena Phillips accident, you noted that
11 inadvertent mixing was a critical factor in causing
12 these accidents.

13 Am I correct in presuming that the
14 inadvertent mixing served to catalyze what was already
15 a source of high energy in the reaction?

16 MR. MURPHY: Yes. There's always a heater
17 reaction potential that can be manifested by catalysts
18 or inadvertent mixing of other chemicals, so I would
19 agree with that.

20 DR. TAYLOR: Thank you.

21 CHAIR MERRITT: Dr. Poje?

22 DR. POJE: John, I noticed the focus of
23 our study has been on domestic incidents, but as I
24 stated earlier, the Bhopal tragedy has had a fairly
25 enormous impact on our thinking about reactive

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1 hazards.

2 Can you give us any perspective as to
3 whether this issue is of current concern outside of
4 the United States?

5 MR. MURPHY: Well, certainly it's a
6 concern in Europe. The Toulouse incident with
7 multiple fatalities involving ammonium nitrate is an
8 example; of course, the Seveso incident that occurred
9 a number of years ago resulted in the Seveso
10 directive, which member companies are required to do
11 safety case analysis. So this is a major concern in
12 Europe.

13 There's been some recent guidance produced
14 by the health and safety executive on runaway
15 reactions in batch reactors. There's also a project,
16 HarsNet, that is attempting to provide reactive
17 chemical hazard evaluation tools to companies in
18 Europe that don't have major resources.

19 So this has been identified for some time
20 as a serious problem in Europe.

21 CHAIR MERRITT: Any other questions?

22 Mr. Bresland.

23 MR. BRESLAND: John, without downplaying
24 the impact of the deaths and injuries that occurred as
25 a result of these incidents, did you also examine the

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1 financial impact of the incidents?

2 MR. MURPHY: Marsh & McLennan report
3 always lists 100 major incidents in the last 30 years,
4 and these are incidents generally \$10 million or
5 greater in property damage, and about 10 percent of
6 the incidents that occurred with 100 lives as losses
7 involved reactive chemical incidents. So I think that
8 supports what I said before, that when reactive
9 chemical incidents do occur, they not only injure
10 people, but they cause major economic loss.

11 MR. BRESLAND: Thank you.

12 MR. MURPHY: I think the exact numbers are
13 in the report, so I'm just giving an overview on that.

14 CHAIR MERRITT: Any other questions?

15 (No response.)

16 CHAIR MERRITT: Thank you, John.

17 MR. MURPHY: Okay. Thank you. And with
18 that, we'll continue discussing the conclusions. I'd
19 like to turn the podium over to fellow investigator
20 Ms. Lisa Long.

21 MS. LONG: Thank you, John. Good morning,
22 board members.

23 Our second conclusion is that there are
24 significant gaps in safety regulations designed to
25 protect workers from reactive hazards. In fact, over

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1 50 percent of the 167 incidents that we looked at
2 involved chemicals that are not covered by OSHA
3 process safety regulations.

4 The Occupational Safety & Health
5 Administration, or OSHA, develops and promulgates
6 regulations designed primarily to protect workers.
7 The primary OSHA regulation covering reactive chemical
8 hazards in industry is OSHA's process safety
9 management or PSM standard.

10 In the Clean Air Act amendments of 1990,
11 Congress specified that OSHA should cover highly
12 reactive chemicals in its standard. The standard has
13 been in effect since 1992; it covers a range of
14 chemical manufacturing processes containing 137
15 individually listed chemicals that present hazards,
16 including reactivity, as well as a class of flammable
17 substances and explosives.

18 OSHA selected the 137 chemicals listed in
19 PSM from a variety of lists, including a list
20 developed by the National Fire Protection Association,
21 or NFPA.

22 NFPA has developed a chemical hazard
23 rating system that addresses health, flammability, and
24 chemical reactivity. OSHA selected reactive chemicals
25 covered in its PSM standard because of their NFPA

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1 reactivity rating of 3 or 4 on a scale of 0 to 4, with
2 4 being the most reactive and 0 being the most stable.

3 Those chemicals were selected from the
4 1975 version of NFPA's Number 49 standard. You can
5 see from the pie chart that only 10 percent of the 167
6 incidents that we analyzed involved chemicals that
7 were rated NFPA 3s or 4s by NFPA.

8 Approximately 60 percent of the 167
9 incidents involved chemicals that were either not
10 listed by NFPA or rated a 0 for reactivity.

11 Our third conclusion is that NFPA
12 instability ratings are insufficient as the sole basis
13 for determining the coverage of reactive hazards in
14 the OSHA PSM standard.

15 The gaps in coverage of reactive hazards
16 in OSHA's PSM standard are due in part to some
17 fundamental limitations in the NFPA reactivity
18 ratings. First, the ratings were designed for initial
19 emergency response and firefighting purposes; they
20 were not designed for process safety purposes, and as
21 such they represent only one aspect of reactive
22 hazards.

23 The ratings were established by a system
24 that relies in part on subjective criteria and
25 considerable judgment in assigning ratings. They

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1 address a chemical's inherent or self-reactive
2 characteristics, not reactivity with other substances,
3 with the exception of water.

4 The ratings do not address processing
5 conditions such as elevated temperatures or pressures,
6 which can be common in chemical manufacturing
7 environments.

8 And finally, NFPA Standard Number 49, from
9 which OSHA selected the PSM-covered reactive
10 chemicals, lists only 325 substances, a relatively
11 small percent of chemicals used in industry. As a
12 result, only 40 of the 137 chemicals listed in PSM are
13 listed due to their reactivity.

14 The staff's next conclusion is that safety
15 regulations designed to protect the public have
16 significant gaps in the coverage of reactive hazards.

17 Over 60 percent of the 167 incidents that
18 we looked at are not covered by existing process
19 safety regulations from the Environmental Protection
20 Association [sic], or EPA.

21 The EPA develops and promulgates
22 regulations primarily designed to protect the public
23 and the environment. The primary safety regulation
24 intended to protect the public from chemical incidents
25 is the EPA's risk management or RMP rule.

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1 This regulation has been in effect since
2 1990, and it covers processes containing individually
3 listed chemicals. Again, in the Clean Air Act
4 amendments of 1990, Congress specified that EPA should
5 cover highly reactive materials in its RMP standard.

6 When determining which substances should
7 be covered by this regulation, EPA listed chemicals
8 based on their toxicity and flammability. EPA stated
9 that it could not identify criteria for listing
10 chemicals due to insufficient technical information.

11 An incident that occurred on February 19,
12 1999, at Concept Sciences in Allentown, Pennsylvania,
13 a tragic illustration of how reactive chemical
14 incidents can affect the public.

15 Concept Sciences was attempting to distill
16 an aqueous solution of hydroxylamine and potassium
17 sulfate, in an attempt to produce 50-percent
18 hydroxylamine. On the day of the incident,
19 hydroxylamine was concentrated to at least 88.4
20 percent. Literature and testing show that
21 hydroxylamine at this concentration is detonable.

22 After the process was shut down for the
23 evening, the material they had accumulated detonated,
24 resulting in an explosion which is shown here. The
25 explosion killed four Concept Sciences employees and

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1 the owner of an adjacent business.

2 Many people were injured. The Concept
3 Sciences facility was destroyed, and ten local
4 buildings and several residences were also damaged.

5 Our fifth conclusion is that the reactive
6 problem is not adequately defined by simply placing
7 chemicals on a list.

8 All chemicals can be reactive. Reactivity
9 is not necessarily an intrinsic property. In fact, we
10 looked at the 167 difference incidents to see if we
11 could try and find common chemicals or classes of
12 chemicals that were more often involved in the
13 incidents, and what we found is that the incidents
14 involved over 40 different chemicals or classes of
15 chemicals, such as acids, bases, and even water.

16 As was the case at both Napp and Morton,
17 hazards arise in specific conditions of a chemical
18 process. Some do not react until they're heated or
19 pressurized, and some react only when mixed.

20 For example, you may have some cleaning
21 chemicals in your home such as ammonia and bleach. On
22 their own, they're relatively stable, but when mixed,
23 they can produce toxic chlorine gas.

24 Reactivity can result in an energy release
25 such as a fire or an explosion, but it can also result

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1 in the release of toxic materials, and we found this
2 to be the case in 37 percent of the 167 incidents.

3 An incident that occurred on June 4, 1999
4 at Whitehall Leather Company in Whitehall, Michigan,
5 illustrates that reactive chemicals can result in
6 toxic releases of gases.

7 On the day of the incident, a truck driver
8 arrived at the Whitehall Leather facility to deliver a
9 load of sodium hydrosulfide solution. The delivery
10 took place on the night shift, and the shift
11 supervisor working that shift that only received what
12 was commonly known as pickle acid previously on night
13 shift, and so he assumed that the sodium hydrosulfide
14 was pickle acid and directed the truck driver to the
15 pickle acid tank to unload the material.

16 The material commonly known as pickle acid
17 on site was actually ferrous sulfate, and when the
18 sodium hydrosulfide solution was unloaded into the
19 ferrous sulfate tank, toxic hydrogen sulfide gas was
20 produced.

21 As a result of the exposure to the
22 hydrogen sulfide gas, the truck driver died, and a
23 Whitehall Leather employee was seriously injured.

24 Many people believe that most reactive
25 incidents occur as thermal runaway reactions in

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1 chemical reactors. We looked at the 167 different
2 incidents and tried to determine if they commonly
3 occurred in similar types of equipment, and what we
4 found was that only 25 percent occur in reactors. The
5 remaining occur in various other types of equipment
6 that can be found in chemical manufacturing and
7 chemical processing facilities, including 22 percent
8 in storage equipment.

9 Reactive incidents are not unique to the
10 chemical manufacturing industry. While 70 percent of
11 the 167 incidents occurred in chemical manufacturing,
12 the remaining 30 percent occurred in storage,
13 handling, and consumer sites.

14 The Whitehall Leather example I just gave
15 is an example of one incident that occurred at a
16 consumer site. Another example of an incident that
17 occurred at a repackaging facility or a storage
18 facility occurred at BPS, or Bartlo Packaging,
19 Incorporated, in West Helena, Arkansas.

20 BPS was repackaging a pesticide called AZM
21 50W. The AZM was offloaded into a warehouse when
22 employees noticed smoke coming from the building, and
23 they called the fire department.

24 A team of four West Helena firefighters
25 were in the process of doing reconnaissance to locate

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1 the source of the smoke. The firefighters had been
2 told by BPS that there was no explosive hazard.

3 When an explosion occurred, the
4 firefighters were struck by a collapsing cinderblock
5 wall. Three of the firefighters were killed, and one
6 was seriously injured.

7 The most likely cause of this incident was
8 the decomposition of a bulk sack of pesticide which
9 had been placed close to a hot compressor discharge
10 pipe.

11 The examples I have given illustrate that
12 it is difficult to develop a list of reactive
13 chemicals or categorize places or equipment where
14 reactive chemicals more often occur.

15 This requires regulators in industry to
16 address the hazards of chemicals and their
17 combinations under specific process conditions. In
18 other words, it's not reactive chemicals; it's
19 reactive chemistry and the management of its hazards.

20 At this point I'll take a few questions
21 from the board.

22 CHAIR MERRITT: Any board questions?

23 DR. TAYLOR: I have one, Lisa. How often
24 is the OSHA's general duty clause used in a reactive
25 incident?

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1 MS. LONG: Well, we didn't -- we weren't
2 able to determine what regulatory standards were used
3 in all of the 167 different incidents. We did look at
4 a subset, and we found that the general duty clause
5 was used, but it's always used after the fact, and it
6 has to be used when there's concrete evidence that
7 industry or the facility knew that a hazard existed.

8 So it is used, but I don't have exact
9 numbers on how many cases, and it's always used after
10 the fact.

11 DR. TAYLOR: Afterwards.

12 CHAIR MERRITT: Dr. Rosenthal?

13 DR. TAYLOR: As OSHA presently defines
14 process which is involving any hazardous chemical
15 storage, manufacturing, handling, would it have
16 encompassed the operations at, for example,
17 repackaging, if they had had a covered substance?

18 MS. LONG: If they had had a sufficient
19 quantity of a covered substance.

20 DR. TAYLOR: It would have been covered.
21 Okay. So it does not just deal with reactors. Am I
22 correct?

23 MS. LONG: It does -- right. It does not
24 just deal with reactors.

25 DR. TAYLOR: Thank you.

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1 DR. POJE: I'd just make a comment. I
2 just was struck by your analysis and the conclusions,
3 looking at the inadequacies of the NFPA system. From
4 what I gather from the report, only 13 NFPA 4
5 chemicals have been listed, and 25 NFPA 3 that operate
6 out of NFPA 49 to provide coverage for OSHA's PSM of
7 reactive chemicals.

8 Give me some examples of what you would
9 see as the glaring omissions in such an approach from
10 some of the investigative work that the board has had
11 to tackle. What other kinds of chemicals have we run
12 into that have not been 3s or 4s or have not actually
13 even been listed?

14 MS. LONG: Well, certainly in the Morton
15 and Napp cases, these contained chemicals that were
16 not 3s and 4s. In general the NFPA rated their
17 chemicals based on their 704 standard. They only
18 rated probably a small number of more common
19 chemicals, and that's what listed in some of their
20 standards, such as the 49 standard.

21 So although many more chemicals can be
22 rated, NFPA itself only rated probably a small
23 percentage of chemicals.

24 DR. POJE: And I was also struck by the
25 fact that OSHA has approached another difficult topic

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1 of flammables by establishing a class of flammables.
2 What kinds of criteria would go into defining that?
3 Obviously not a named list of any of thousands and
4 thousands of chemicals that could be flammable?

5 MS. LONG: OSHA defines a flammable as a
6 substance that is flammable under -- that has a flash
7 point of under 100 degrees Fahrenheit, so there's a
8 very objective criteria for determining what a
9 flammable is.

10 DR. POJE: Thank you.

11 MR. BRESLAND: Getting back to your
12 conclusion number 4, which has to do with RMP
13 coverage, do you have any examples of reactive
14 chemicals that are not covered by the RMP regulation?

15 MS. LONG: A good example would be in the
16 Concept Sciences incident. Hydroxylamine is an NFPA
17 3, and it is covered in PSM but not in RMP.

18 MR. BRESLAND: Okay. Thank you.

19 CHAIR MERRITT: What we're doing or what
20 we're saying, I think, or what you're asking us or
21 telling us is that industry, being able to look at the
22 vast combination of chemicals that exist on their
23 properties which may be unique to everyone else, is
24 the first step to prevention of these chemicals
25 reacting and creating a reactive hazard. Is that

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1 correct?

2 MS. LONG: Yes. It's a difficult issue,
3 and it's very process- and condition-specific.

4 DR. ROSENTHAL: Let me follow on that
5 question, based on what you stated.

6 If you were to look, in terms of the
7 incidents that you looked at -- Napp, Morton, Concept
8 Sciences -- is there a way of looking at what the
9 potential existed for these accidents? Is there
10 something equivalent to an objective property, such as
11 flammability, and in particular I'm thinking of
12 something like δh or δp ?

13 MS. LONG: There are many different things
14 that --

15 CHAIR MERRITT: Would you define δh , δp ,
16 please, for us.

17 MS. LONG: δp would be a pressure
18 increase, and δh is heat of a reaction you're
19 referring to. There are many different parameters
20 that can define reactivity; that's what makes it so
21 difficult. But we have looked at a few such as δh and
22 find that, more often than not, they're exothermic
23 reactions, so they have a positive heat of reaction.

24 There are some endothermic reactions which
25 would consume energy, but most give off energy.

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1 DR. ROSENTHAL: Just make the comment that
2 a positive heat of reaction is expressed as a negative
3 term.

4 MS. LONG: Right.

5 (General laughter.)

6 CHAIR MERRITT: Thank you very much.

7 MS. LONG: Okay. Giby Joseph will now
8 finish the conclusion.

9 MR. JOSEPH: Thank you, Lisa.

10 Good morning. Our next conclusion is that
11 existing sources of incident data are not adequate to
12 identify the number, severity, and causes of reactive
13 incidents, or to analyze incident frequency trends.

14 This conclusion is based on the following
15 findings: No single data source provides a
16 comprehensive collection of chemical incidents from
17 which reactive incident data could be retrieved or
18 tracked. In particular, OSHA and EPA incident data
19 sources are not designed to identify or track reactive
20 incidents.

21 We had to search over 40 different data
22 sources to compile information on our 167 incidents.
23 A few of these are listed here. The last two, The
24 Accident Database and MHIDAS, are European sources
25 that contain some US incident data.

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1 Again, the key message is that there is no
2 one data source that anyone can go to to find a
3 comprehensive collection of reactive incident data.

4 Another key finding was that the data that
5 is available is very limited in terms of root cause or
6 lessons-learned information. This leads us to
7 conclusion number 8: There is no publicly available
8 database for sharing lessons learned from reactive
9 incidents.

10 Fewer than 40 of our 167 incidents
11 contained causal or lessons-learned information. This
12 information was obtained from incident reports
13 generated by government agencies, industry
14 associations, and companies, rather than any one
15 particular database.

16 Although there are fundamental limitations
17 in available incident data, we feel that our analysis
18 still gave us some meaningful results regarding causes
19 of reactive incidents.

20 Our data analysis indicated that reactive
21 incidents are often caused by inadequate recognition
22 and evaluation of reactive hazards. We found that
23 over 60 percent of the incidents in our data for which
24 we had causal information occurred because reactive
25 hazards were not adequately identified or evaluated.

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1 The incident at BP Amoco is a good example
2 where reactive hazards were not adequately recognized.

3 The incident caused three fatalities and significant
4 damage to the unit that produced Amodel, a plastic
5 used in products such as lawn and garden tools and
6 automobile parts.

7 The CSB investigated this incident, and
8 what we found was that Amodel was susceptible to
9 thermal decomposition at processing temperatures.
10 However, BP Amoco wasn't unaware -- was unaware that
11 Amodel could decompose. Thus, Amodel's decomposition
12 hazard was not adequately addressed in the process
13 design.

14 A critical lesson learned from this and
15 other incidents in our data was that industry needs to
16 improve its recognition of these hazards. This will
17 be a key message in our report.

18 Now that we've established that
19 recognition of reactive hazards is a problem, the next
20 five conclusions will address some specific issues
21 regarding hazard identification and hazard evaluation.

22 Conclusion number 9: Neither OSHA PSM nor
23 EPA RMP standards explicitly require specific hazards
24 to be examined when performing a process hazard
25 analysis or PHA. Although PSM and RMP standards

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1 require that all hazards be addressed during a PHA,
2 improving reactive hazard management requires that
3 both inherent self-reactive hazards, such as thermal
4 and mechanical shock, and hazards resulting from
5 combinations of chemicals under process-specific
6 conditions, such as inadvertent mixing of incompatible
7 materials and runaway reactions, be identified and
8 evaluated.

9 Rate and quantity of gas or heat generated
10 by possible reactions, thermal stability of reaction
11 mixtures, byproducts, waste streams, and products and
12 effects of variables such as charging rates, catalyst
13 additions, and possible contaminants are all relevant
14 factors that need to be considered to adequately
15 recognize reactive hazards.

16 Our next conclusion is that OSHA PSM and
17 EPA RMP standards do not explicitly require that
18 multiple sources be consulted when compiling necessary
19 process-safety information.

20 We found that over 90 percent of the data
21 involved chemistry readily available in literature.
22 This is important, because where causal information
23 was available, 25 percent of our data occurred due to
24 inadequate hazard identification.

25 A variety of resources can be consulted to

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1 better understand reactive hazards. We'll talk about
2 some of them in the next slide.

3 Conclusion number 11: Publicly available
4 resources are not always used by industry to assist in
5 identifying reactive hazards. During our analysis we
6 gathered most of our hazard information from searches
7 in literature such as Bretherick's Handbook of
8 Reactive Chemical Hazards and Sax's Dangerous
9 Properties of Industrial Materials, and also
10 computerized tools such as NOAA's The Chemical
11 Reactivity Worksheet.

12 However, we found during our site visits
13 and through our industry survey that such resources
14 are not always used.

15 The key method in this slide is that
16 companies need to perform more thorough searches of
17 literature and other sources to obtain existing
18 knowledge about reactive hazards. To ensure this
19 happens, PSM and RMP process-safety information
20 requirements might need to be modified.

21 Next conclusion: There is no publicly
22 available database to share reactive chemical test
23 data. Chemical information found in databases such as
24 CHETAH, DIPPR, and National Institute of Standards and
25 Technology's Chemistry Web Book are not sufficient to

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1 fully understand reactive hazards.

2 Now, this doesn't mean that these sources
3 don't provide useful information; we just mean that
4 reactive hazard identification and evaluation usually
5 need more detailed information than these sources can
6 provide at this time.

7 Chemical testing which determines effects
8 of various processing temperatures and pressures and
9 effects of other variables, such as contaminants, need
10 to be conducted.

11 Several companies visited by CSB generate
12 and collect this type of reactive chemical test data;
13 however, we found that these companies very rarely
14 share this data with others in industry.

15 To improve management of reactive hazards,
16 industry needs to better share and communication
17 reactive hazard information gathered from test data.
18 Establishing a centralized repository of such data may
19 help.

20 Conclusion number 13: Industry has
21 published some voluntary good-practice guidelines for
22 managing reactive hazards, but these are limited and
23 not complete. Organizations such as CCPS and trade
24 associations such as ACC, SOCMA, and NACD are working
25 at providing more guidance to industry through

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1 programs such as Responsible Care and Responsible
2 Distribution.

3 Now, some areas that need more guidance
4 are: How do you deal with hazards of inadvertent
5 mixing of incompatible materials during storage and
6 handling, and how do you manage reactive hazards
7 throughout a process life cycle; hazard
8 identification, hazard evaluation, management of
9 change, and inherently safer design are all critical
10 elements necessary for managing reactive hazards
11 within a process.

12 Our last conclusion is that, given the
13 impact and diversity of reactive hazards, progress in
14 the prevention of reactive incidents requires both
15 enhanced regulatory and nonregulatory programs.

16 Both regulators and industry understand
17 that reactive hazards present a problem, so to improve
18 management of these hazards and ensure the safety of
19 workers and the public, we need them to do more, like
20 enhancing PSM and RMP requirements, making more
21 guidance available, improving industry initiatives,
22 such as Responsible Care and Responsible Distribution.

23 Board members, those are the staff's
24 conclusions. I'll let John come up and direct the
25 questions to the staff.

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1 CHAIR MERRITT: Thank you.

2 Do you have questions, board? Please
3 raise your hand.

4 MR. MURPHY: We're open to all questions
5 for Gibby, Lisa, or I.

6 CHAIR MERRITT: Thank you.

7 Dr. Taylor.

8 DR. TAYLOR: I guess I'll guess start with
9 one, and then I'll come back.

10 Gibby, you mentioned that there were areas
11 needing more guidance, and specifically management of
12 reactive hazards that -- for example, hazard
13 identification, management of change, hazard
14 evaluation, and inherently safer design.

15 Now, the question I have is regarding your
16 investigation. Among the companies you interviewed
17 and the onsite visits that you conducted, did you
18 investigate or pose any questions about the design of
19 equipment, at any of sites, on preventing catastrophic
20 releases?

21 MR. JOSEPH: We did ask questions
22 regarding how they evaluate hazards, how they
23 recognize reactive hazards, and our conclusions were
24 based primarily on our site visits and our industry
25 survey, so we did ask those kind of questions.

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1 MR. MURPHY: I would have to say that we
2 only casually investigated inherently safer
3 principles. That came up in a discussion, but it
4 wasn't a major focus of the investigation. But it was
5 certainly a point of discussion.

6 DR. TAYLOR: Was this at all of the
7 facilities or just in general?

8 MR. MURPHY: I would say it came up at
9 some of the facilities.

10 MR. JOSEPH: But primarily our focus was
11 on how they identified and evaluated reactive hazards.

12 DR. TAYLOR: How they --

13 MR. JOSEPH: Yes.

14 DR. TAYLOR: Okay. Thank you.

15 CHAIR MERRITT: Anyone else?

16 Dr. Rosenthal?

17 DR. ROSENTHAL: Yes. The BP Amoco
18 accident you described as an endothermic reaction.
19 For the most part would you say that most reactive
20 accidents are associated with endothermic or
21 exothermic events?

22 MR. JOSEPH: I'll let John discuss more,
23 but I would say that primarily exothermic reactions.

24 DR. TAYLOR: That is -- in the percentage
25 of investigations that you conducted, what was the

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1 percentage of those incidents that were exothermic?

2 MR. JOSEPH: Well, the only one that we
3 know of is BP Amoco --

4 DR. TAYLOR: Endo-; that was endo-.

5 MR. JOSEPH: Endothermic.

6 DR. TAYLOR: Okay. But exothermic --

7 MR. JOSEPH: But we really didn't focus
8 specifically on how many were exothermic and how many
9 were endothermic.

10 DR. TAYLOR: Okay.

11 MR. JOSEPH: But we do know BP Amoco was
12 an endothermic reaction.

13 MR. MURPHY: I might add that we did look
14 at several of the most notorious incidents, and the
15 heater reaction involved most often was exothermic.
16 But we didn't do a comprehensive study of this; this
17 was just a sampling of some of the well known
18 incidents.

19 CHAIR MERRITT: Dr. Poje?

20 DR. POJE: I'd like to observe that I'm
21 impressed by the breadth of the analysis that you've
22 gone through here. I'd like to think that there's a
23 great interdigitation between regulations, between
24 best practices, between guidance, that they all speak
25 to each other, and they all become an important part

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1 of the context of chemical process safety.

2 Let me get to the issue of the data,
3 though. I'm kind of puzzled and would want to seek
4 some more information from you about the capture of
5 incident data by the regulatory agencies.

6 Under what circumstances does OSHA conduct
7 an investigation of an incident, and what's the nature
8 of their investigation, reports? Are they part of
9 those that give you good information on causation?
10 And how does the OSHA PSM standard require facilities
11 to investigate?

12 MR. JOSEPH: Sure. Let me break that
13 question down; I'll answer your first part first.

14 In general OSHA investigates incidents
15 that have caused three or more hospitalizations or
16 have had a fatality. But they can also be referred
17 through complaints or media reports.

18 I think, to answer the second part, the
19 incident reports that OSHA does collect or perform --
20 they're -- the information from that is stored in the
21 IMIS database, and it is publicly available.

22 DR. POJE: But a fundamental aspect, both
23 of good practice as defined by the CCPS, but also now
24 as a part of the regulatory standard under PSM for
25 OSHA, is to investigate incidents.

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1 MR. JOSEPH: Sure. And that's the third
2 part of your question. Let me get to that.

3 And the third part of your question is PSM
4 does require that facilities or companies investigate
5 an incident, and -- but the only thing about that is
6 PSM does not require, once a company has performed an
7 investigation, to share that incident back with OSHA
8 so they can understand what type of incidents or what
9 type of things that they need to focus on.

10 DR. TAYLOR: But can OSHA request -- if
11 they go on site to conduct an investigation, then can
12 they request the information from the company?

13 MR. JOSEPH: Yes. Once they do an audit,
14 they can request companies' investigations on prior
15 incidents.

16 DR. POJE: I'm struck by our past
17 experience as a board, where our depth of
18 investigation on any single incident is quite deep or
19 embracing of the importance of pursuing root causation
20 is very deep, and the value of that work for providing
21 lessons on how to be truly preventative are quite
22 important, so pursuing lessons-learned causation is a
23 most important aspect.

24 MR. JOSEPH: Sure. One thing that I
25 wanted to add was that PSM doesn't require that root

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1 cause be investigated or any management system
2 failures.

3 DR. ROSENTHAL: To follow up on Dr. Poje's
4 question, I guess EPA does require that all incidents
5 be investigated and that they be reported, and these
6 are available on the database.

7 MR. JOSEPH: The five-year accident
8 history?

9 DR. ROSENTHAL: Yes. And that has
10 details -- but what you're saying is that they don't
11 have a separate class of reactors so that you can
12 identify -- they have a thorough report, but they
13 don't have it on reactives per se.

14 MR. JOSEPH: That's right.

15 DR. ROSENTHAL: Is that correct?

16 MR. JOSEPH: That's right.

17 CHAIR MERRITT: Mr. Bresland.

18 MR. BRESLAND: I guess following up on Dr.
19 Poje and Dr. Rosenthal, is -- in answer to their
20 questions you've described the way that OSHA collects
21 incident data on reactive chemicals, and the way that
22 EPA collects information on reactive chemicals.

23 If you put those two databases together,
24 or if you were able to put those two databases
25 together, how comprehensive a list would that be of

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1 reactive chemical incidents that would be available to
2 the public or to trade organizations or to outside
3 interested parties?

4 MR. JOSEPH: To be honest, we really
5 didn't consider that or look at that issue. Maybe
6 John can talk about that a little bit more.

7 MR. MURPHY: I'll let Lisa speak to that.

8 MS. LONG: I was just going to say that's
9 in essence part of what we did. We took their data --
10 EPA's data and OSHA's data, along with data from
11 several other sources, and came up with our 167
12 different incidents, so that's as comprehensive as
13 could get, I think.

14 CHAIR MERRITT: But it doesn't exist that
15 way in normal --

16 MS. LONG: It doesn't exist that way.
17 There's a lot of work --

18 CHAIR MERRITT: -- course of events. You
19 have to pull it together yourself.

20 MR. JOSEPH: That's right. One of the
21 things I did talk about was there's no one
22 comprehensive collection of reactive incident data,
23 and that is one of the major problems.

24 MR. BRESLAND: Yes. I think that was the
25 point I was trying to make in my question, in that if

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1 you're a facility that's covered by PSM, there is a
2 requirement that you keep records of your incidents,
3 but there's no requirement that this --

4 MR. JOSEPH: Yes. To share that data.

5 CHAIR MERRITT: Right. And you're also
6 saying that there's no standard format for the detail
7 that might go in there. So everyone could have
8 different information, and none of it really is
9 useful.

10 MR. JOSEPH: That's absolutely correct.

11 CHAIR MERRITT: And they're not actually
12 always identifying a reactive incident.

13 MS. LONG: Right.

14 DR. ROSENTHAL: The reactive -- am I
15 correct that the reactive incidents are identified in
16 OSHA.

17 CHAIR MERRITT: On OSHA, but not with --

18 DR. ROSENTHAL: But you have this anomaly
19 that you have a good system, good data and everything
20 in the EPA system, but they don't collect data on
21 reactives, whereas you have the situation in OSHA
22 where they do have the data in the plant on reactives,
23 but they --

24 MR. JOSEPH: But you don't share --

25 DR. ROSENTHAL: -- don't structure it and

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1 they don't report it.

2 MR. JOSEPH: To share.

3 CHAIR MERRITT: And one of the points is
4 it's not just data collection for data collection;
5 it's being able to use this as an industry to be able
6 to prevent these incidents from occurring within our
7 own facilities or within other facilities that have
8 like processes.

9 MS. LONG: If I could just add to Irv's
10 question, OSHA does regulate reactives, and you have
11 to do reports under PSM, but you would have to look at
12 the incident and decide if it occurred due to
13 reactivity; it doesn't have a checkbox that says, This
14 is a reactive incident. So the data's there, but you
15 have to analyze it and see whether or not it's a
16 reactive incident.

17 DR. ROSENTHAL: Thank you.

18 CHAIR MERRITT: Very good. Thank you.

19 Oh, Dr. Poje, one more?

20 DR. POJE: Yes. Just one more. I think
21 we've dealt with some very important issues about
22 coverage of how complex the problem is and how
23 insufficient a single listing of chemicals could be,
24 but you also elevated at least two important aspects
25 of process-safety management regulations that also

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1 bear some additional reflection.

2 One is on the recognition of the hazards,
3 how to address the multitude of potential sources of
4 information that are available, and the second is on
5 the process of hazard assessment elements. Can you
6 give us a little bit more meat on those two important
7 points?

8 MR. JOSEPH: That's absolutely correct.
9 Again, I just want to clarify -- I mean, I just want
10 to emphasize that one of the biggest -- or key
11 findings and one of our major conclusions is that we
12 need to better identify and evaluate reactive hazards.

13 I think and we think it's a major problem in
14 industry, so if we could do a better job in terms of
15 actually identifying reactive hazards and --

16 CHAIR MERRITT: Before they happen.

17 MR. JOSEPH: Before they happen -- and
18 evaluating some of these hazards, then we can get a
19 better handle on these incidents.

20 DR. POJE: And the hydroxylamine question,
21 seeing a paper published on the reactivity chemistry,
22 after a terrible tragedy at Concept Sciences and a
23 horrific tragedy at the Nissan chemical facility in
24 Japan, is the wrong way of putting that cart more
25 appropriately after the horse; the horse should be out

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1 of the barn.

2 Knowing the information about the
3 reactivity hazards and the cart of process-hazard
4 assessment should be driven by that knowledge
5 beforehand.

6 Now, what are the missing elements in PHA
7 or the elements that you think need to be
8 strengthened?

9 CHAIR MERRITT: Is that covered in your
10 recommendations?

11 MR. JOSEPH: Yes, it is.

12 CHAIR MERRITT: Why don't we leave that
13 for the recommendations.

14 DR. ROSENTHAL: One last quick thing so
15 that my friends in industry don't kill me: Is it true
16 that there are a number of people in industry have
17 expressed a willingness to share data, but they're
18 afraid that if the data is misused they'll get sued?

19 CHAIR MERRITT: Always a fear.

20 MR. MURPHY: There has been a group of
21 major chemical companies that have proposed sharing
22 reactive chemical test data. There are certain
23 barriers that probably have to be overcome. There is
24 liability concerns, and there's also the concern that
25 data can be misinterpreted. So there is a move afoot

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1 to do something just like that; we're going to talk
2 about it during our recommendations, but there are
3 some barriers to overcome.

4 CHAIR MERRITT: Thank you very much.
5 Very, very good.

6 And with that, we'd like to have Don
7 Holmstrom.

8 MR. MURPHY: Yes. I'm going to turn it
9 over to Don Holmstrom, who will review our
10 recommendations.

11 Don.

12 MR. HOLMSTROM: Thank you, John.

13 Good morning, Madam Chair, board members,
14 Mr. Jeffress, Mr. Warner. Today I will present the
15 staff recommendations from the reactive hazard
16 investigation to the board.

17 The recommendations program of the
18 Chemical Safety Board not only participates in the
19 development of recommendations but, just as
20 importantly, advocates for, tracks, and ensures the
21 successful adoption of board recommendations.

22 Safety recommendations are the primary
23 tool used by the board to motivate implementation of
24 safety improvements and prevent future incidents.

25 We use our unique independent accident

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1 investigation perspective to identify trends or issues
2 that might otherwise be overlooked.

3 The Chemical Safety Board recommendations
4 may be issued to corporations, trade associations,
5 government entities, safety organizations, labor
6 unions, and others. Board recommendations begin the
7 process that eventually saves lives and protects the
8 environment.

9 Recommendations are issued and closed only
10 by a vote of the board. The staff proposes making
11 significant recommendations to the following
12 organizations: the Occupational Safety & Health
13 Administration, the Environmental Protection Agency,
14 the National Institute of Standards and Technology,
15 AIChE's Center for Chemical Process Safety, American
16 Chemistry Council, Synthetic Organic Chemical
17 Manufacturers Association, National Association of
18 Chemical Distributors.

19 Board members, the first recommendation
20 that will be presented today is to the Occupational
21 Safety & Health Administration. The recommendation
22 reads:

23 Amend the process-safety management
24 standard 29 CFR 1910.119 to achieve more comprehensive
25 control of reactive hazards that could have

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1 catastrophic consequences.

2 The purpose of the process-safety
3 management standard is to protect workers, preventing
4 or minimizing the consequences of catastrophic
5 releases of highly hazardous chemicals, including
6 listed reactive chemicals.

7 The OSHA PSM standard lists 137 highly
8 hazardous chemicals, only 38 of which are considered
9 highly reactive based on an NFPA rating of 3 or 4.
10 Using the list is an inadequate approach for
11 regulatory coverage.

12 Additionally, in recommendation number 1
13 to OSHA: broaden the application to cover reactive
14 hazards resulting from process-specific conditions and
15 combinations of chemicals. Additionally, broaden
16 coverage of hazards from self-reactive chemicals.

17 Board members, it is evident that the
18 process-safety management standard has significant
19 gaps in the coverage of reactive hazards, because it
20 is based on a limited list of individual chemicals
21 with inherently reactive properties.

22 Using lists of chemicals is an inadequate
23 approach for regulatory coverage of reactive hazards.

24 Not only is the listing of self-reactive chemicals
25 incomplete due to the insufficiency of relying on NFPA

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1 instability ratings, but also reactive hazards
2 resulting from process-specific conditions and
3 combinations of chemicals are not addressed at all.
4 Fifty percent of the 167 incidents examined by the
5 Chemical Safety Board, the chemicals involved were not
6 covered by the process-safety management standard.

7 Also, in recommendation number 1 to OSHA,
8 in expanding PSM coverage, use objective criteria.
9 Consider criteria such as the North American Industry
10 classification system, a reactive hazard
11 classification system; for example, based on heat of
12 reaction or toxic gas evolution; incident history or
13 catastrophic potential.

14 While reactive hazards are currently
15 addressed by a limited list of individual chemicals,
16 there are other objective criteria that can be used to
17 achieve more comprehensive coverage.

18 Also in recommendation number 1, in the
19 compilation of process-safety information, require
20 that multiple sources of information be sufficiently
21 consulted to understand and control potential reactive
22 hazards.

23 Ninety percent of the incidents in the
24 CSB's data involve known chemistry. The OSHA PSM
25 standard does not explicitly require the use of

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1 multiple sources of information concerning reactive
2 hazards when compiling process-safety information, nor
3 does the standard define what specifically is to be
4 included in compiling reactivity data, the level of
5 detail required, or the method of compilation.

6 Additionally, in recommendation number 1,
7 concerning process-safety information, useful sources
8 include literature surveys -- for example,
9 Bretherick's Handbook of Reactive Chemical Hazards,
10 Sax's Dangerous Properties of Industrial Materials --
11 information developed from computerized tools,
12 chemical reactivity test data produced by employers or
13 obtained from other sources -- for example,
14 differential-scanning calorimetry, thermographic
15 metric analysis, accelerating-rate calorimetry --
16 relevant incident reports from the plant, the
17 corporation, the industry, and government; and
18 chemical abstract service.

19 Additionally, in recommendation number 1
20 to OSHA, augment the process-hazard analysis element
21 to explicitly require an evaluation of reactive
22 hazards.

23 The PSM standard does not explicitly
24 define requirements to address reactive hazards during
25 a process hazard analysis.

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1 Additionally, in recommendation number 1,
2 in revising this element -- process-hazard analysis --
3 evaluate the need to consider relevant factors such as
4 rate and quantity of heat or gas generated; maximum
5 operating temperature to avoid decomposition; thermal
6 stability of reactants, reaction mixtures, byproducts,
7 waste streams, and products; effect of variable, such
8 as charging rates, catalyst addition, and possible
9 contaminants; understanding the consequences of
10 runaway reactions or toxic-gas evolution.

11 The second recommendation to the
12 Occupational Safety & Health Administration:
13 Implement a program to define and record reactive
14 incidents that OSHA investigates. Structure the
15 collected information so that it can be used to
16 measure trends in the number of catastrophic reactive
17 incidents. At a minimum, identify industry sectors
18 that experience the incidents, chemicals and processes
19 involved, and consequences.

20 There is no comprehensive repository of
21 chemical incident data. The CSB examined more than 40
22 data sources. OSHA databases don't identify and
23 therefore can't track reactive incidents.

24 At this time I would ask the board members
25 if they have any questions on the recommendations to

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1 OSHA.

2 CHAIR MERRITT: Dr. Taylor?

3 DR. TAYLOR: Don, I have a few questions.

4 One is what other alternatives did the staff consider
5 for recommendations to OSHA?

6 MR. HOLMSTROM: There was discussion of
7 other alternatives in terms of how specific the
8 recommendation should be based on the findings of the
9 reactive hazard investigation.

10 The staff decided that the recommendation
11 should be outcome based and should address the
12 deficiencies found in the staff's analysis of the 167
13 incidents.

14 DR. TAYLOR: Okay. So in doing that, did
15 you consider like defining a particular class of
16 reactive chemicals, and if you did, what did you find
17 would be a problem associated with that?

18 MR. HOLMSTROM: There were insufficient
19 findings that would lend support to any specific
20 regulatory approach. The staff considered several
21 possible approaches, and they are discussed in the
22 language of the recommendation that suggests
23 considering various types of objective criteria.
24 Those are listed for exemplary purposes.

25 There is no one parameter that

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1 comprehensively defines reactivity. An example would
2 be the Whitehall Leather Company incident that was
3 discussed in the presentation involving the
4 inadvertent mixture of two incompatible chemicals that
5 gave rise to a toxic gas release, is an example of one
6 type of outcome from a reactive incident that is
7 different from, let's say, a runaway reaction.

8 DR. TAYLOR: Okay. I'll stop for now;
9 then I'll hold the other questions.

10 CHAIR MERRITT: Mr. Bresland?

11 MR. BRESLAND: Can you give us an
12 example -- this is getting back to recommendation
13 number 1, where you state broadened coverage of
14 hazards from self-reactive chemicals. Can you give us
15 an example of a self-reactive chemical that would be
16 included in this coverage?

17 MR. HOLMSTROM: Well, I can give you an
18 example of a chemical in the course of the
19 investigation that was involved in a reactive incident
20 but was not covered by the PSM standard but
21 nonetheless was highly hazardous and self-reactive.

22 In the Napp incident the product of the
23 mixture taking place in the blender in the Napp
24 incident, a gold precipitation agent, was not rated by
25 NFPA. However, the MSDS for the chemical gave it a

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1 rating of 3, which, if it had been rated by NFPA, it
2 would have been considered a highly reactive chemical
3 and included -- as a self-reactive chemical in the
4 NFPA list, but this incident shows the limitations of
5 relying on the NFPA system as a sole basis for
6 regulating reactive hazards.

7 CHAIR MERRITT: But that information is
8 available, so if we're doing -- our group was doing a
9 PHA or process-hazard analysis to begin with and they
10 looked at the reactive product of these two materials
11 and came up with this gold precipitating agent, they
12 would have data available in other sources to be able
13 to identify it as a highly reactive material.

14 MR. HOLMSTROM: That certainly is the
15 ideal situation. In the Napp incident there was
16 inadequate process-hazard analysis that led to
17 identification of the hazards involved.

18 CHAIR MERRITT: Okay.

19 MR. BRESLAND: One other question.

20 CHAIR MERRITT: Mr. Bresland.

21 MR. BRESLAND: One of the criteria that
22 you suggested using for increasing the coverage under
23 the OSHA PSM regulation was the NAICS or the old SIC
24 code characterization. If you did that, would -- and
25 I assume that you would pick certain SIC codes that

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1 were generally related to the chemical-processing
2 industry. But reactive chemicals are used across a
3 broad range of industries. How would you deal with
4 that dichotomy?

5 MR. HOLMSTROM: Again, the staff is not
6 recommending any particular regulatory approach, but
7 we're suggesting, for exemplary purposes, that the
8 NAICS system, which is the new system that is
9 generally replacing the SIC codes, could be used to
10 identify industry sectors where a significant number
11 of incidents were occurring or most incidents were
12 occurring, and that could be used as one of the
13 objective criteria in terms of identifying coverage
14 for regulatory purposes.

15 DR. POJE: If I could just follow up on
16 that, I had some experience in the early 1990s trying
17 to watch the implementation of the toxics-release
18 inventory provisions of the amendments to the --
19 Superfund amendments of 1986.

20 And there one of the elements of coverage
21 was connected to SIC code numbers, and it was a
22 horrific difficulty in finding out how people would
23 characterize themselves, one year based upon a primary
24 business interest that characterized one number, a
25 subsequent year changing that number because they may

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1 have had an elevation in product output that allowed
2 them to redefine themselves, not that they were trying
3 to avoid characterizing themselves, but that also has
4 difficulties.

5 And do you see -- did the staff look at
6 the relative strengths and weaknesses of these
7 objective criteria and try to do a rating amongst
8 them?

9 MR. HOLMSTROM: No, we did not. We listed
10 those for exemplary purposes, for example. We listed
11 them because they perhaps were being utilized in other
12 regulatory schemes -- for example, SIC codes or NAICS
13 codes -- or utilized to some degree in the program
14 level determinations of EPA's risk management rule.

15 CHAIR MERRITT: And in your
16 recommendation, then, you would expect that in the
17 rulemaking process, identifying the right way of
18 identifying these sectors would then be hashed out and
19 determined.

20 MR. HOLMSTROM: Right. And that's just
21 one example. There are other examples that we gave.
22 One is a reactive hazard classification such as heat
23 of reaction could be used; another is incident
24 history, which is also used in the EPA's RMP rule, and
25 there are other objective criteria, such as

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1 catastrophic potential could be used as an objective
2 criteria.

3 CHAIR MERRITT: So your recommendation has
4 been written in a way that suggests many different
5 possibilities but doesn't really focus in on any one.

6 MR. HOLMSTROM: That's correct.

7 CHAIR MERRITT: Dr. Taylor?

8 DR. TAYLOR: I do have one more question.
9 Did you give any consideration, Don, to whether OSHA
10 should give exemptions to regulation?

11 MR. HOLMSTROM: We discussed it. The
12 staff felt that there were not sufficient findings
13 that would support the issuance of a recommendation
14 for a specific regulatory approach such as opt-out
15 clauses, exemptions, that sort of thing.

16 CHAIR MERRITT: Dr. Rosenthal?

17 DR. ROSENTHAL: First of all, I want to
18 congratulate you and the staff for an excellent
19 presentation and bringing together of information, and
20 it's been extremely valuable. I know it's been very
21 difficult work, and so I wanted to go with that first.

22 MR. HOLMSTROM: Thank you.

23 DR. ROSENTHAL: In terms of the NAIC
24 codes, as we were talking about, the NAIC codes and
25 the coverage -- all of these are things which

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1 presumably OSHA is equipped to deal with on the basis
2 of getting something that is not cost-benefit but
3 cost-effective, and they have to balance costs and, I
4 hate to mention the word, but political and other
5 considerations in going through fashioning a
6 regulation that can go in.

7 So from the point of view of NAIC codes
8 and from the point of view of criteria, you
9 essentially -- the staff felt that this should be left
10 to OSHA to decide. Is that the way I --

11 MR. HOLMSTROM: That's correct, Dr.
12 Rosenthal. We're just providing suggestions and
13 exemplary alternatives with the idea in mind that we
14 think there are ways that reactive hazards can be
15 regulated, and we give some examples, but we don't
16 believe there's sufficient findings for us to
17 recommend a specific approach.

18 DR. ROSENTHAL: Just a point of
19 information: I'm aware of the answer, but how long --
20 has OSHA been considering regulatory reform for some
21 period of time on hazardous chemicals? And since
22 when?

23 MR. HOLMSTROM: Well, if you're -- I
24 think -- and correct me if I'm wrong, but I think
25 you're referring to the petition that I believe --

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1 DR. ROSENTHAL: Yes.

2 MR. HOLMSTROM: -- was issued in 1995, and
3 so that issue has been before OSHA for some time and
4 only recently was dropped from the list of potential
5 regulatory actions by OSHA.

6 DR. ROSENTHAL: By the pressure of other
7 things. Thank you.

8 MR. HOLMSTROM: Yes. Thank you.

9 CHAIR MERRITT: Dr. Taylor, do you have
10 another question?

11 DR. TAYLOR: Just one specific question.
12 I don't know if Don can answer it, but does OSHA
13 exempt -- they're a regulator agency, so they don't
14 exempt companies when they regulate on a standard --
15 right? -- from any of those, to your knowledge.

16 MR. HOLMSTROM: OSHA hasn't used the
17 regulatory feature of an exemption, to my knowledge;
18 however, EPA in the risk-management plan rule has a
19 tiered approach for regulatory coverage that does
20 offer different types of requirements based on certain
21 criteria, which could be deemed to be an opt-out, so
22 to speak, in that context.

23 However, the staff did not study the
24 specifics of the efficacy or the performance of those
25 particular regulatory features sufficiently in order

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1 to make a recommendation as to their desirability.

2 DR. TAYLOR: Okay. Thank you.

3 CHAIR MERRITT: All right. Thank you.

4 So we should proceed. Then at this point
5 we are almost on time. We would like to take a --

6 DR. TAYLOR: Are we going through the rest
7 of the recommendations, or are we going to stop?

8 MR. HOLMSTROM: Yes, we just did the OSHA
9 recommendation.

10 DR. TAYLOR: Yes. That's what I was
11 thinking.

12 CHAIR MERRITT: Right. Go ahead, Don.
13 I'm sorry.

14 MR. HOLMSTROM: Okay. Thank you.

15 CHAIR MERRITT: We're ready for a break,
16 though.

17 (General laughter.)

18 CHAIR MERRITT: Not that I'm hurrying them
19 along.

20 MR. HOLMSTROM: I would never stand in the
21 way of a break, Madam Chair.

22 The next recommendation is to the US
23 Environmental Protection Agency, EPA. The
24 recommendation reads: Revise the chemical accident
25 prevention program, 40 CFR 68, better known as the RMP

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1 rule, to include catastrophic reactive hazards,
2 including those resulting from process-specific
3 conditions and combinations of chemicals. Seek
4 congressional authority, if necessary, to amend the
5 regulation.

6 Despite the fact that the Clean Air Act
7 amendment specified that EPA should cover highly
8 reactive chemicals, the list of 130 chemicals covered
9 by RMP does not contain any substances listed to
10 reactive hazards.

11 In 60 percent of the 167 incidents
12 examined by the Chemical Safety Board, the chemicals
13 involved were not RMP listed. Nearly 50 of 167
14 incidents affected the public.

15 The second recommendation to the
16 Environmental Protection Agency reads as follows:
17 Implement a program to define and record reactive
18 incidents. Structure the collected information so
19 that it can be used to measure trends in the number of
20 catastrophic reactive incidents.

21 EPA databases don't identify and therefore
22 can't track reactive incidents.

23 At a minimum, in terms of developing a
24 program to track and record reactive incidents,
25 identify industry sectors that experience the

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1 incidents; chemicals and processes involved; and
2 impact on the workforce, the public, and the
3 environment. Require reporting of reactive incidents
4 and processes covered by 40 CFR 68 that involve both
5 regulated and nonregulated reactive hazards. Seek
6 congressional authority, if necessary, to amend the
7 regulation.

8 Do the members of the board have any
9 questions on the recommendations to the Environmental
10 Protection Agency?

11 CHAIR MERRITT: Dr. Rosenthal?

12 DR. ROSENTHAL: Yes. Right now the
13 Environmental Protection Agency contains and defines
14 its incidents in how many classes? I believe there's
15 four?

16 MR. HOLMSTROM: Are you referring to the
17 types of hazards covered, Dr. Rosenthal?

18 DR. ROSENTHAL: Yes.

19 MR. HOLMSTROM: Yes. Well, flammables,
20 toxics -- but it doesn't cover reactives.

21 DR. ROSENTHAL: Yes. Toxics, flammables,
22 leaks -- so that in essence are you thinking that they
23 ought to put another class like reactives or something
24 in there?

25 MR. HOLMSTROM: Again, in this particular

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1 recommendation we propose an outcome, but we do not
2 propose specific --

3 DR. ROSENTHAL: Okay.

4 MR. HOLMSTROM: -- way to get at -- one
5 possibility is forming a classification -- that is
6 certainly one possibility -- based on objective
7 criteria.

8 DR. ROSENTHAL: Okay.

9 MR. BRESLAND: Question.

10 CHAIR MERRITT: Mr. Bresland.

11 MR. BRESLAND: This goes back to
12 recommendation number 1 to EPA, where you're asking
13 that they include reactive hazards in their list of
14 chemicals covered by the RMP regulation.

15 EPA now has a list of chemicals, about
16 130, 140 chemicals; some of them are -- approximately
17 half of them are toxics, toxic gases, and the other
18 half are highly flammable chemicals.

19 Can you give me an example of a chemical
20 that would be covered by your recommendation that
21 isn't currently covered by the RMP regulation?

22 MR. HOLMSTROM: Well, I think one example
23 was given before, and that was hydroxylamine. It's
24 covered by the process-safety management standard as a
25 highly hazardous chemical due to its inherent

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1 reactivity, but it's not currently covered by the RMP
2 rule.

3 CHAIR MERRITT: Dr. Poje.

4 DR. POJE: And would I be correct in
5 perceiving also that the situation that unfurled at
6 the Morton facility, in which 2-ethylhexylamine and
7 ortho-nitrochlorobenzene, NFPA 0 and 1, put into a
8 reactor, reacting without knowledge of the
9 decomposition reaction, causes a runaway, blows open
10 the tank, releasing chemicals into the air and a broad
11 distance away from the facility, raining down onto
12 that community.

13 But those kinds of process-specific
14 circumstances would be encompassed in your
15 recommendation for reform in the RMP process.

16 MR. HOLMSTROM: That's correct, Dr. Poje.
17 The first example of hydroxylamine was a self-
18 reacting chemical. The Morton example is chemicals in
19 their combination under process-specific conditions.

20 CHAIR MERRITT: Dr. Rosenthal.

21 DR. ROSENTHAL: In the EPA recommendation
22 you say, Require reporting of reactive incidents and
23 processed covered by 40 CFR and both regulated and
24 nonregulated reactive hazards. I'm interested in the
25 nonregulated reactive hazards, two points:

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1 What did you have in mind about
2 nonregulated reactive hazards, and why is that text
3 included in reference to EPA and not in reference to
4 OSHA?

5 MR. HOLMSTROM: Okay. That's a very good
6 question. First I'll answer and say nonregulated --
7 there are certain incidents that OSHA investigates --
8 I mean -- excuse me -- EPA investigates that may
9 involve nonregulated chemicals.

10 For example, EPA was involved in
11 investigating the incident at Concept Science, but
12 that was not an RMP-covered chemical, but they should
13 track, record that as a reactive incident. It's also
14 part of the Clean Air Act amendments that every five
15 years or, as necessary, EPA should evaluate their list
16 of substances.

17 And in order to adequately make that
18 evaluation, they need to be looking beyond the list of
19 regulated substances. And so our concern there is
20 that, in talking to EPA, and why we included it with
21 EPA, they indicated to us -- they expressed a concern
22 to us that they may not be able to, for example,
23 request five-year accident history data on
24 nonregulated substances because they were not within
25 the RMP rule, and we felt it was important to include

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1 that specific language in order to capture that sort
2 of data that could occur even within a covered
3 process -- that's covered for some other reason but
4 could involve a nonregulated substance in a reactive
5 incident.

6 DR. ROSENTHAL: So, in other words, if EPA
7 broadened their coverage of reactives, that's in
8 essence what we're saying, to broaden their coverage
9 of reactives.

10 MR. HOLMSTROM: We have two
11 recommendations. If they did 1, that would certainly
12 help with 2, but we cannot speculate in time as to
13 which recommendation may or may not be adopted first,
14 but we're confident that we'll get both successfully
15 implemented.

16 CHAIR MERRITT: Thank you.

17 Any other questions?

18 (No response.)

19 CHAIR MERRITT: Then proceed with the rest
20 of the recommendations.

21 MR. HOLMSTROM: The next recommendation is
22 to the National Institute of Standards and Technology,
23 NIST. NIST is a nonregulatory federal agency within
24 the US Commerce Department's Technology
25 Administration.

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1 NIST's mission is to develop and promote
2 measurements, standards, and technology to enhance
3 productivity and facilitate trade.

4 The recommendation reads: Develop and
5 implement a publicly available database for reactive
6 hazard test information. Structure the system to
7 encourage submission of data by individual companies
8 and academic and government institutions that perform
9 chemical testing.

10 There is no publicly available
11 comprehensive database to share reactive chemical test
12 data.

13 The next recommendation is to the Center
14 for Chemical Process Safety, CCPS. The American
15 Institute of Chemical Engineers Center for Chemical
16 Process safety is an organization of chemical
17 manufacturers, insurers, consultants, and others
18 established to prevent catastrophic releases of
19 hazardous chemicals.

20 The CCPS has published over 70 books and
21 CD-ROM tools covering a number of process-safety
22 topics.

23 The recommendation reads: Publish
24 comprehensive guidance on model reactive hazard
25 management systems.

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1 The industry's voluntary good-practice
2 guidelines for managing reactive hazards are limited
3 and not complete.

4 Additionally, in recommendation 1 to CCPS:
5 At a minimum, ensure these guidelines cover, for
6 companies engaged in chemical manufacturing, reactive
7 hazard management, including hazard identification,
8 hazard evaluation, management of change, inherently
9 safer design, and adequate procedures in training; for
10 companies engaged primarily in the bulk storage,
11 handling, and use of chemicals: identification and
12 prevention of reactive hazards, including the
13 advertent mixing of incompatible substances.

14 The findings of the hazard investigation
15 indicate that more than 60 percent of the incidents
16 for which some causal information was available
17 involved inadequate practices for identifying hazards
18 or conducting process-hazard evaluations.

19 Nearly 50 percent involved inadequate
20 procedures for storage, handling, or processing of
21 chemicals.

22 The second recommendation to CCPS is to
23 communicate the findings and recommendations of this
24 report to your membership.

25 The next recommendation is to the American

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1 Chemistry Council, ACC. The first recommendation is
2 to expand the Responsible Care process-safety code to
3 emphasize the need for managing reactive hazards.

4 The American Chemistry Council is a trade
5 association of chemical manufacturers, with 190 member
6 and partner companies that sponsor the Responsible
7 Care program designed to improve the health, safety,
8 and environment performance of member companies,
9 largely through codes of management practices such as
10 the process-safety code. The process-safety code does
11 not explicitly include requirements for reactive
12 hazard management.

13 Also related to the first recommendation:

14 Ensure that member companies are required to have
15 programs to manage reactive hazards that address, at a
16 minimum, hazard identification, hazard evaluation,
17 management of change, inherently safer design, and
18 adequate procedures and training.

19 Also ensure that there is a program to
20 communicate to your membership the availability of
21 existing tools, guidance, and initiatives to aid in
22 identifying and evaluating reactive hazards.

23 The second recommendation to the American
24 Chemistry Council reads: Develop and implement a
25 program for reporting reactive incidents that includes

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1 the sharing of the relevant safety knowledge and
2 lessons learned with your membership, the public, and
3 the government, to improve safety system performance
4 and prevent future incidents.

5 Member companies submit to ACC annual
6 reports on process-safety incidents that meet specific
7 criteria, but this data does not include causes of
8 incidents or lessons learned.

9 We are seeking in this recommendation to
10 ensure that this data is received by ACC as an
11 organization and then shared with others.

12 The third recommendation to the American
13 Chemistry Council: Work with NIST, the National
14 Institute for Standards and Technology, in developing
15 and implementing a publicly available database for
16 reactive hazard test information, promote submissions
17 of data by your membership.

18 The fourth recommendation to ACC is:
19 Communicate the findings and recommendations of this
20 report to your membership.

21 The next recommendation goes to the
22 Synthetic Organic Chemical Manufacturers Association,
23 SOCMA. The first recommendation is: Expand the
24 Responsible Care process safety code to emphasize the
25 need for managing reactive hazards.

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1 The Synthetic Organic Chemical
2 Manufacturers Association, SOCMA, is a trade
3 association serving the specialty batch and custom
4 chemical industry, representing more than 320 member
5 companies.

6 Also in recommendation number 1 to SOCMA:
7 Ensure that member companies are required to have
8 programs to manage reactive hazards that address, at a
9 minimum, hazard identification, hazard evaluation,
10 management of change, inherently safer design, and
11 adequate procedures in training.

12 Also ensure that there's a program to
13 communicate to your membership the availability of
14 existing tools, guidance, and initiatives to aid in
15 identifying and evaluating reactive hazards.

16 The second recommendation to SOCMA reads:
17 Develop and implement a program for reporting
18 reactive incidents that includes the sharing of
19 relevant safety knowledge and lessons learned with
20 your membership, the public, and the government to
21 include safety system performance and prevent future
22 incidents.

23 The third recommendation to SOCMA reads:
24 Work with NIST in developing and implementing a
25 publicly available database for reactive hazard test

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1 information, promote submissions of data by your
2 membership.

3 For SOCMA the fourth recommendation reads:

4 Communicate the findings and recommendations of this
5 report to your membership.

6 The next recommendation is to the National
7 Association of Chemical Distributors, NACD. The
8 National Association of Chemical Distributors is an
9 international association of chemical distributor
10 companies. Member companies process, formulate,
11 repackage, warehouse, transport, and market chemical
12 products exclusively for an industry customer base of
13 about 750,000 customers.

14 The recommendation reads: Expand the
15 existing Responsible Distribution process to include
16 reactive hazard management as an area of emphasis. At
17 a minimum ensure that the revisions address storage
18 and handling, including the hazards of inadvertent
19 mixing of incompatible chemicals.

20 Thirty percent of the incidents examined
21 by the CSB involved a variety of other industrial
22 sectors that store, handle, or use chemicals in bulk
23 quantities. There's a lack of concise guidance
24 targeted at companies engaged primarily in the bulk
25 storage, handling, or use of chemicals to prevent

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1 inadvertent mixing of incompatible substances.

2 The second recommendation to NACD:
3 Communicate the findings and recommendations of this
4 report to your membership.

5 The final recommendations are to labor
6 unions and ASSE: Communicate the findings and
7 recommendations of this report to your membership.
8 This recommendation is addressed to the International
9 Association of Firefighters; the Paper, Allied-
10 Industrial, Chemical, and Energy Workers International
11 Union, PACE; the United Steelworkers of America; the
12 Union of Needle Trades, Industrial and Textile
13 Employees, UNITE; United Food and Commercial Workers
14 International Union; and the American Society of
15 Safety Engineers, ASSE.

16 Board members, that concludes the staff
17 recommendations presentation of the reactive hazard
18 investigation.

19 Do the members of the board have any
20 additional question for myself or other members of the
21 staff?

22 CHAIR MERRITT: Dr. Taylor, did you have
23 one?

24 DR. TAYLOR: I just wanted to say -- I
25 wanted to thank the staff. This is a very

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1 comprehensive report. I know it's been a long time
2 coming.

3 One of the things that I find with the
4 recommendations that you just made -- one of the
5 things that stick out at me are the sharing of
6 information among companies, and I'm hoping with the
7 recommendations that we're making to specific
8 associations that that would be done -- that will be
9 done, so that information regarding reactive chemical
10 accidents can be recorded, talked about, and somehow,
11 without trade secret information being released, maybe
12 can figure another way of doing that.

13 CHAIR MERRITT: Dr. Rosenthal.

14 DR. ROSENTHAL: Just in passing -- I
15 hadn't noticed it till now: There are other
16 organizations besides ASSE who have a strong role in
17 safety. Any reason why, for example, AIHA, which now
18 promotes itself as both a safety and industrial-
19 hygiene group is not included?

20 DR. TAYLOR: Just didn't think about it,
21 huh?

22 MR. HOLMSTROM: We primarily picked the
23 organizations that were listed in relationship to the
24 interest they showed in the process of compiling the
25 information and sharing it with stakeholder groups

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1 that occurred during the reactive hazard investigation
2 two-year process.

3 CHAIR MERRITT: And we certainly don't
4 limit the distribution of this information to those
5 organizations and certainly it's available on our
6 website and will be also.

7 DR. TAYLOR: And since it is one of the
8 organizations that I belong to, I think it will be
9 responsive.

10 CHAIR MERRITT: We heard you, Dr. Taylor.

11 (General laughter.)

12 CHAIR MERRITT: Dr. Poje?

13 DR. POJE: Don, if you could just give me
14 a little bit of perspective, as I said earlier, I
15 believe that there is an importance to the
16 comprehensiveness of all of the regulations, that they
17 work together to strengthen the system of safety.

18 Just for perspective's sake, give me an
19 understanding of the trade associations that you've
20 issued recommendations to. You've characterized them.

21 Do they themselves comprehensively encompass all
22 those who are likely to have such reactive hazard
23 management responsibilities?

24 MR. HOLMSTROM: Well, let me first say
25 that I think the good-practice guidelines and industry

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1 initiatives such as Responsible Care and CCPS
2 guidelines are an important part of impacting process
3 safety in the industry.

4 But it is true that that is not the
5 complete universe or the complete arena of chemical
6 safety, and, for example, not all the industries that
7 might encounter reactive hazards are necessarily
8 represented by ACC. I can give the pulp and paper
9 industry as an example, and there are others.

10 DR. TAYLOR: Pharmaceuticals.

11 MR. HOLMSTROM: Pharmaceuticals.

12 DR. POJE: We have an ongoing
13 investigation into a reactive hazard incident at one
14 of the pulp and paper industries.

15 And then also you said 320-some-odd
16 members of SOCMA -- clearly there can be many more
17 smaller and mid-size enterprises that have not found
18 SOCMA to become a member and would like out perhaps
19 unavailable to the SOCMA guidance or unavailable to
20 the awareness building that SOCMA might do.

21 MR. HOLMSTROM: That's correct. I think
22 there were 15,000 submissions of data to the EPA under
23 the RMP submission requirements.

24 CHAIR MERRITT: If there are no other
25 questions, then --

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1 DR. ROSENTHAL: One last question. Of
2 course, I bet Gerry I would be last.

3 I noticed in all of your recommendations,
4 besides looking at hazard evaluation and hazard
5 identification, you dealt with one prevention measure;
6 that was inherently safer processes.

7 But I didn't see any mention -- and was
8 that just omission or just whatever -- of effective
9 passive mitigation devices, which are emphasized in
10 the EPA thing, such as diking and hardened control
11 rooms.

12 Was this just an omission or just because
13 we didn't do enough work on it or what?

14 MR. HOLMSTROM: Irv, can I ask, is that in
15 relationship to the good-practice guidelines and
16 industry initiatives section or in terms of the
17 regulatory recommendations.

18 DR. ROSENTHAL: No. I'm thinking in --
19 when you mention in the guidance to industry.

20 MR. HOLMSTROM: Oh, the guidance to
21 industry.

22 DR. ROSENTHAL: Yes.

23 MR. HOLMSTROM: What we tried to limit our
24 recommendations to are those areas in the examination
25 of the 167 incidents that -- where there was safety-

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1 system or lessons-learned information of those safety
2 systems or areas where the most incidents were
3 occurring in those safety-system areas, so we tried to
4 concentrate on those, although there are certainly
5 other areas such as you've mentioned that are
6 important; that's how we crafted the recommendations.

7 DR. ROSENTHAL: Okay.

8 You want to say something, John?

9 MR. MURPHY: Our data sources weren't
10 adequate enough to look at passive mitigation and
11 layers of protection. Had our data sources been
12 better, we may have been able to address this more
13 systematically.

14 DR. ROSENTHAL: I was just thinking of the
15 fact that Morton might have been mitigated in part had
16 an effective vent system been in place, like Dyer's
17 [phonetic] design, which is basically a passive
18 mitigation type of thing.

19 Thank you.

20 CHAIR MERRITT: With that, thank you very
21 much, staff. I appreciate it, Don.

22 MR. HOLMSTROM: Thank you.

23 CHAIR MERRITT: We will take a ten-minute
24 break and reconvene here at quarter after, in which we
25 will then take public comment. And if you would like

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1 to still register to comment, please do, and those
2 will be brought to me, and we'll begin with that when
3 we reconvene.

4 (Whereupon, a brief recess was taken.)

5 CHAIR MERRITT: At this time we have a
6 number of people who have requested to comment.

7 I'll call you as best I can pronounce your
8 name on the list that we have been provided, and I
9 would ask you to limit your comments to three minutes
10 and, for our recorder and reporter, to speak your name
11 clearly, and also give us your affiliation or interest
12 in this proceeding.

13 First one registered was Glen Irwin. And
14 we would ask you to come to this front podium, please,
15 so that we can have good audio and video of you. And
16 three minutes, please.

17 MR. IRWIN: I'm Glen Irwin, and I'm the
18 health and safety coordinator for PACE International
19 Union. I have a very strong tie to this study. We've
20 encouraged it; we supported it, and I want to say I
21 think they've done an outstanding job, from our
22 perspective.

23 CHAIR MERRITT: Thank you.

24 MR. IRWIN: There's three things -- I've
25 investigated several reactive incidents since working

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1 with the international union, and there's three things
2 that always happen; they're common to every incident
3 that we've investigated, kind of golden threads that
4 weave through.

5 The first one is we find a failure in the
6 process-hazard analysis; had we have done a better
7 process-hazard analysis, we could have prevented the
8 incident.

9 The thing that happens is we don't look at
10 the worst-case scenarios necessarily; we may look at
11 just what happens in the case of fire, and we don't
12 look at what could happen in an exothermic runaway
13 reaction, because if we did, we might be able to
14 design relief valves to where we could mitigate -- as
15 Dr. Rosenthal mentioned, we could mitigate the effects
16 before the incident got out of hand.

17 I believe that recommendation number 1 to
18 OSHA and EPA will cover this. I think -- it may not
19 be worded as strongly as I'd like to see it worded,
20 but I believe that it will -- if they will implement
21 the recommendations from the board, that that would
22 correct that problem.

23 The second one -- the second fatal flaw
24 that we've found is management of change. We find
25 that when you change the proportions of the mixtures

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1 or the temperatures of the mixtures, that that is
2 where we run into trouble.

3 We try to do -- we try to operate using
4 normal procedures to do abnormal operations, and when
5 we do that, we end up having catastrophic accidents.

6 I believe that the recommendation that you
7 made to CCPS and the ACC, American Chemistry Council,
8 will cover this. I would much rather have seen it a
9 recommendation to OSHA and EPA instead of a voluntary
10 compliance, but if that's all we can get on this, why,
11 I'll be happy to accept that, because I believe that
12 if it is communicated to their member units and they
13 do follow this, then the management of change would be
14 able to prevent it.

15 The third one is incident investigation.
16 Every incident had warning signs. I've not looked at
17 any fatal incident that didn't have precursors leading
18 up to it, and have we have investigated the minor
19 incidents and had learned some lessons from the minor
20 incidents and took corrective actions, then we would
21 have been able to prevent the incidents from
22 occurring.

23 I believe your recommendation number 2 to
24 OSHA and EPA, where we set up a database of lessons
25 learned -- and to set up a database of lessons

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1 learned, they will have to investigate the incidents,
2 so I think it kind of backdoors getting in there, and
3 it's not as strongly worded as I would like to have
4 seen it worded, but I believe it will meet the needs
5 to be able to prevent the incident.

6 So on our major three things that we have,
7 which is process-hazard analysis failures, management-
8 of-change failures, and incident-investigations and
9 lessons-learned failures, I think that you have
10 addressed them, and we will support it, and I ask the
11 board to support the staff's recommendations.

12 Thank you.

13 CHAIR MERRITT: Thank you, Mr. Irwin.

14 MR. IRWIN: Thank you very much. Good
15 job.

16 CHAIR MERRITT: The next person on my list
17 is Alan Goss. And if you would, state your name and
18 give us your affiliation or interest in this session.

19 MR. GOSS: Yes. I'm Alan Goss. I was
20 burned in the Phillips Chemical explosion on March 27,
21 2000. I was life-flighted to Hermann Hospital; spent
22 101 days on the burn unit. I was burned over 50
23 percent of my body with second- and third-degree
24 burns.

25 I've gone through countless hours of

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1 physical and emotional therapy. I've had 18
2 surgeries; right now I have one scheduled for next
3 month and possibly one more after that, and hopefully
4 that will be the end of the surgeries.

5 The things that you guys have done in the
6 past several years working up to this day are very
7 important to the working people. I know that I cannot
8 go back and take back that day in my life that has
9 changed my life forever, but possibly what gets
10 accomplished here today can prevent future accidents
11 like this from happening, and for that I want to say
12 thank you.

13 CHAIR MERRITT: Thank you.

14 Mr. Roby Plemons.

15 MR. PLEMONS: Good morning. I'm Roby
16 Plemons. I'm a PACE union worker. I think you all of
17 the Chemical Safety Board for inviting us here to
18 speak to you today.

19 I've worked at the Chevron Phillips plant
20 in Pasadena, Texas, for the past 24 years, and the
21 last 13 years I've lost the following coworkers and
22 friends: Ruben Alamillo, James Allen, Burt Arcy,
23 James Campbell, Eloy Gonzales, Mark Greesor, Jeff
24 Harrison, Derbert Haskell, Scotty Hawkins, James
25 Hubbard, Richard Leos, James Nichols, Jesse Northrup,

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1 Mary K. O'Connor, Gerald Pipher, Cipriano Rodriguez,
2 Jesse Trevino, Lino Trujillo, Nathan Warner, Bill
3 Depree, Jose Gonzales, Juan Garcia, Scott Martin, John
4 Medrano, Juan Martinez, Rick O'Guinn, Jose Rangel, and
5 Rodney Gott.

6 The last three involved reactive
7 chemicals: Rodney Gott, Juan Martinez, Jose Rangel.
8 On March 27, 2000, my life was almost taken along with
9 three of my friends. I received 42 percent burns. I,
10 like Alan, was life-flighted to Hermann Hospital.

11 It did take the life of one of my friends,
12 Rodney Gott. I'd worked with Rodney for 22 years.
13 Rodney is one of the most Christian persons I've known
14 in my life and rarely a day goes by that I don't think
15 about him and the agony his family goes through.

16 The last two explosions at the plant
17 involved reactive chemicals. There needs to be more
18 understanding on the hazards and the potentials of
19 these products. My friends' and our lives have
20 changed forever.

21 When I look at my friends some days -- and
22 you'll see Jeff here in a minute -- some days I just
23 want to cry, and other days I just ask why.

24 In closing, I ask you to help move this
25 industry forward when dealing with reactive chemicals

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1 and let us all feel that Rodney and the others did not
2 die in vain.

3 Thank you.

4 CHAIR MERRITT: Thank you.

5 The next person for comment is Jeff Kuper.

6 Please speak your name and your
7 affiliation.

8 MR. KUPER: My name is Jeff Kuper. I
9 worked, two and a half years ago, as the construction
10 site manager at Chevron Phillips Chemical Company. I
11 set off for work that morning with total optimism in
12 the future.

13 That morning -- or actually, at 1:25 that
14 afternoon, everything changed. I, like you, had total
15 innocence, and then I found out that things could
16 change for the worse.

17 I went through extensive surgeries; I've
18 been through the burn unit at Hermann, as my coworkers
19 had said. But the toll on my family has been
20 tremendous. And as we talk about the fatalities and
21 we talk about the injuries today, there is a human
22 toll that is there that is just unquestionably
23 difficult.

24 Those that die leave behind a family that
25 is in terrible need. And there isn't necessarily a

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1 social infrastructure set up to capture those people.

2 We might be naive to think that, through insurance
3 and suits and through workers' comp and other things,
4 that there's adequate compensation for the death and
5 injuries that are incurred out there in the industry.

6 There's not.

7 So I came here today with no knowledge of
8 what the Chemical Safety Board was up to, and I'm very
9 encouraged with what the board is asking of their
10 staff and what the staff has found.

11 I only regret today that they hadn't begun
12 this work or hadn't implemented it five and a half or
13 six years ago so it would have been enforced when I
14 needed it most. And I'm grateful to be here today.
15 It was nip and tuck whether I was going to make it or
16 not, but I'm very grateful that I am here, and I'm
17 very grateful for what you're trying to accomplish.

18 And I plead with you to please pass the
19 recommendation of your staff. Thank you.

20 CHAIR MERRITT: Thank you, gentlemen, all
21 of you. You put a very human face on numbers, and
22 when we see a number like three injuries, we may be
23 tempted to think, Well, that's only three injuries.

24 But when we hear the depth of the
25 suffering that is represented by those numbers by your

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1 courage to come and speak with us today, it helps to
2 put an emphasis and an urgency on the work that we do.

3 And we appreciate very much your
4 willingness to speak with us this morning.

5 Next, George Freda.

6 MR. FREDa: Thank you. My name is George
7 Freda. I'm a consultant -- safety environmental
8 consultant with about 45 years of industrial
9 experience in the chemical, refining, and related
10 industries.

11 I'm also chairman of one of the major
12 local emergency planning committees that we have here
13 in Harris County, responsible for the whole
14 unincorporated area.

15 Another one of the hats that I wear is I'm
16 the president of the local chapter of the Institute
17 for Certified Hazardous Materials Managers, the
18 professionals, some 6000 of which in the United States
19 handle and plan around hazardous materials; the kinds
20 of professionals that are involved with reactive
21 chemicals on a daily basis.

22 My main comment is twofold: I have two
23 comments I want to make. Number one, I didn't hear
24 any comment -- perhaps one side comment -- about
25 material safety data sheets, MSDSs.

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1 I know of databases where there are more
2 than 100,000 MSDSs registered, including on federal
3 and other governmental database sites. And so I'm
4 wondering why MSDSs were not looked at as a resource
5 for determining hazards of chemicals.

6 In my experience, on an MSDS you will find
7 information -- for example, what materials it's
8 compatible with and also what conditions to avoid. I
9 recommend that MSDSs be used in a more formal way than
10 they have been in the past.

11 The second comment I want to make -- and
12 I'll make it very brief -- in my years of experience
13 of investigating incidents using the method of
14 determining root cause, invariably, nearly 100 percent
15 of root-cause analyses of serious incidents in the
16 industry comes down to unsafe acts.

17 I didn't hear any comments or any part of
18 the investigation that determined whether or not there
19 were unsafe acts as part of the root causes for these
20 terrible incidents.

21 And I recommend that, for those industries
22 that do not use root cause to determine unsafe acts,
23 that this technique be used; it's a very powerful one.

24 Thank you.

25 CHAIR MERRITT: Thank you.

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1 Our last speaker is Marc Levin.

2 MR. LEVIN: Good morning. My name is Marc
3 Levin. I'm with Shell Global Solutions in the US,
4 located on the other side of Houston, west side, at
5 the West Hall of Technology Center.

6 And I am the reactive hazards assessment
7 program manager for Shell Global Solutions, and I've
8 been doing this kind of work for about ten years now,
9 and I do appreciate the opportunity to speak to the
10 Chemical Safety Board and for the opportunity to
11 attend this meeting.

12 And I also have to say it's very difficult
13 to get up here and speak, especially after hearing
14 from those who have directly experienced this kind of
15 event. I myself have been involved in investigations
16 for many reactive hazards related events, including
17 some that involved fatalities, and it is a very
18 sobering experience.

19 Overall I just have a few comments. I'd
20 like to say that I strongly support the conclusions
21 from this team, particularly the one that says there's
22 no single list of reactive chemicals or any sort of
23 chemicals that will tell you what the reactivity is
24 going to be.

25 If you look at the number of chemicals you

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1 can see in any given process unit -- you know, 50, 100
2 or so -- and look at all the combinations, you end up
3 with an astronomical number of combinations, and then
4 dial in the conditions; it is really a mind-boggling
5 feat to try to just put together a list that will
6 cover everything.

7 And so, yes, this is something that is
8 strongly dependent on the conditions as well as what
9 other species are around.

10 I would like to emphasize the need to look
11 at decompositions, which were alluded to -- polymers,
12 hydroxylamines, other classes of materials -- because
13 that's an area that I find my colleagues often
14 overlook: Heat something up high enough, and it will
15 fall apart, and frequently it will be exothermic, but
16 not always.

17 Lastly, on the subject of
18 incompatibilities, which I did touch about briefly
19 earlier, I'd like to encourage use of the EPA waste
20 compatibility document that was published in 1980 from
21 Berkeley, which I believe is the heart of the NOAA
22 chemical reactivity worksheet.

23 It basically predicts incompatibilities
24 based on chemical functional groups on molecules. The
25 list of functional groups could be expanded, but

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1 nevertheless it's a great start, and years before NOAA
2 had their item on the website, we actually programmed
3 our own version to predict incompatibilities, and it's
4 an easy way to screen through that kind of -- those
5 interactions.

6 And lastly I'd like to expand or say a few
7 words on the scope of incompatibilities. You need to
8 look at not only process streams, but utility streams,
9 additives, catalysts, feed lines that may be coming
10 from other units, vent lines in common, because you
11 can get ingress from other parts of a unit or process
12 that can end up with a catastrophic result. We blew
13 up a plant in England that way about ten years ago.

14 Thank you very much.

15 CHAIR MERRITT: Thank you.

16 I would encourage all of you -- this is
17 just the beginning of the process to have a change in
18 regulation that would improve and cover process safety
19 of reactive hazards.

20 I would encourage all of you and those
21 listening on the worldwide web as well to participate
22 in the rulemaking process and to contribute all of
23 your expertise when that finally comes to be, and we
24 hope that that will be soon. With that, I appreciate
25 and thank you for your comments.

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1 I at this time would like to ask the
2 board, was there anything that was raised in the
3 comments that you feel would not allow us to go
4 forward with a proposed acceptance or vote on the
5 recommendations?

6 VOICES: No.

7 CHAIR MERRITT: With none being stated,
8 then I would -- I think the best way to do this will
9 be to go for each recommendation and take a voice
10 vote, which is required -- the recommendation.

11 I'll call for a motion and ask for a
12 second, and if there is one, then we'll open for
13 discussion.

14 So at this point I would like turn to
15 recommendation number 1 and ask if a motion can be
16 made for that recommendation.

17 DR. TAYLOR: Madam Chair, I move that we
18 accept recommendation number 1 to the Occupational
19 Safety & Health Administration.

20 CHAIR MERRITT: Dr. Taylor makes that
21 motion to accept.

22 Is there a second?

23 MR. BRESLAND: Yes, I second.

24 CHAIR MERRITT: And Mr. Bresland seconds.

25 At this point we would open it to the board members

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1 for any discussion. Is there anyone who has any
2 discussion concerning this recommendation number 1?

3 DR. ROSENTHAL: Yes, I do. I'm in general
4 agreement with the thrust of the regulation, but I
5 believe that we can create value by expanding it and
6 perhaps making it a little more specific in what I
7 believe the intent was.

8 So to that end, I would like to offer
9 recommendations along the -- what is being projected.

10 And because that recommendation has four bullets
11 under it, I think it's best, since they tie together,
12 that I do it in the form three motions. Okay?

13 CHAIR MERRITT: Okay. That's fine. We'll
14 take each one individually.

15 DR. ROSENTHAL: So if that's all right,
16 I'll proceed, go through one, say two words about it,
17 and then go on to the -- we'll perhaps act on the
18 first one, and then I can go on to the second and
19 third parts of this. Okay? We'll vote, then, in
20 three ways?

21 CHAIR MERRITT: Yes.

22 DR. ROSENTHAL: Okay. So let me start in
23 and say my first part of the recommendation would
24 read, To amend the process-safety management standard
25 to achieve more comprehensive control of reactive

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1 hazards that could produce catastrophic releases --
2 and I use that term in the sense that OSHA does:
3 serious injury to workers.

4 And the two bullets that I would like to
5 include in that first thing are to broaden coverage of
6 the reactive hazards by creating a class of highly
7 reactive substances that would include chemicals,
8 singly or in combinations, that pose a substantial
9 reactive hazards in addition to presently covered
10 self-reactive chemicals.

11 The second bullet I'd like to attach on to
12 that, again, is implied in the previous one, but I'd
13 like to emphasize it more to OSHA: Define membership
14 in the class of highly reactive substances using a
15 combination of one or more objective criteria that
16 relate to the potential for catastrophic release due
17 to uncontrolled reaction of the materials
18 intentionally charged to the process.

19 And I'll comment on that: Consider
20 objective criteria that characterize the hazard, such
21 as the specific heat of reaction, pressure changes
22 under prescribed conditions, and the toxicity of
23 reaction products.

24 Now, that is the first part of that --

25 CHAIR MERRITT: I understand.

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1 Are there any comments or further
2 discussion from the board with regard to this -- these
3 two word changes or these two paragraph changes?

4 Dr. Taylor.

5 DR. TAYLOR: Madam Chair, while what Dr.
6 Rosenthal has mentioned is one possibility of
7 regulation that OSHA should consider -- and I
8 understand that -- I'm basing my information on what I
9 received from the staff, and their recommendation is
10 that we not recommend one particular regulatory
11 approach, which, when I viewed the change in the
12 language, this appears to be a regulatory approach
13 that OSHA should adopt.

14 My suggestion would be that we still
15 consider, as the staff has recommended, that our
16 recommendations not be outcome-based -- I mean, that
17 they be outcome-based and not specific and let OSHA
18 determine whether this is the approach they'd like to
19 use, or another such approach.

20 CHAIR MERRITT: Okay. Any other -- yes,
21 Dr. Rosenthal -- I'm sorry -- Poje? I looked at you.

22 DR. POJE: I'm honored.

23 (General laughter.)

24 DR. POJE: I have looked at this
25 carefully, and I'm also persuaded that I think the

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1 work that has been brought forward today and brought
2 forward in May characterized the problems, and I think
3 we can make a little bit more progress by being more
4 specific in the direction that we would point the
5 Occupational Safety & Health Administration towards.

6 I am persuaded by the approach taken
7 earlier in defining classes of flammable materials,
8 and I think broadening the concept to specifically
9 push for a class of highly reactive substances that
10 again have the restrictions -- speaking to the process
11 conditions and intentionally mixed defines and narrows
12 the situation in a way that's more likely to draw the
13 specific action from the Occupational Safety & Health
14 Administration.

15 I do believe that this is in concert with
16 the spirit of the original recommendation by the
17 staff, but I think it gives a much greater degree of
18 guidance to the agency on how to proceed down the
19 pathway over a matter that, for more than a decade,
20 has languished. I think this is a stronger way of
21 putting the terms to the agency.

22 CHAIR MERRITT: Dr. Taylor.

23 DR. TAYLOR: But this is only one specific
24 approach that still, if implemented by OSHA, would not
25 possibly cover all reactive chemicals or reactive

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1 processes. This is one way.

2 And, again, from the investigation that we
3 conducted, there were insufficient findings for us to
4 define a particular class of chemicals; that's what
5 our staff stated.

6 So while this is one alternative, I do
7 feel that we should not be specific in making a
8 recommendation to OSHA that this is what they should
9 adopt. One is, for us, we're going to have to
10 advocate for our recommendations, and I think we need
11 to stick with outcome-based measures versus specific
12 recommendations and let OSHA, as an agency, determine
13 which one is best for them to use.

14 CHAIR MERRITT: Okay. Thank you.

15 Mr. Bresland.

16 MR. BRESLAND: My thoughts on this are
17 that we have listened to the staff today, and we've
18 heard the issue, and I think everybody who is the
19 board recognizes that there is a problem with the
20 issue of reactive chemicals; however, my feeling is
21 that in making a recommendation to OSHA, I would agree
22 with Dr. Taylor that there's a -- it's better to give
23 them the broad authority of writing a new regulation
24 without being prescriptive to them, and I would hope
25 that when OSHA, in its wisdom, decides to write this

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1 regulation, that they would come to people -- for
2 example, people in the audience here who are the
3 experts in this area, and use their expertise in
4 coming up with what is the best way to write this
5 regulation; what should be done in terms of writing a
6 regulation.

7 So I'm quite happy with the regulation
8 as -- or with the recommendation as originally written
9 by the staff.

10 CHAIR MERRITT: Is there any other
11 comment?

12 Dr. Rosenthal.

13 DR. ROSENTHAL: Just one closing comment.

14 CHAIR MERRITT: You have to be last.

15 DR. ROSENTHAL: I'm going to just comment
16 I believe that I would like OSHA to know my opinion.
17 They can perfectly easily disregard it; they haven't
18 listened to me in the past.

19 (General laughter.)

20 DR. ROSENTHAL: So I'd like to share it.

21 CHAIR MERRITT: So you want to be 100
22 percent.

23 DR. ROSENTHAL: Yes. And so I would like
24 to be a little more specific, recognizing that. But I
25 think that what's still as worded is outcome-based;

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1 it's catastrophic releases; it doesn't say if we lean
2 towards oh what a oh value should be, which op, which
3 combination.

4 So I would like to be a little more
5 specific, and I stand, as I've just suggested, of
6 sticking my personal nose in, but since I'm going to
7 sign it, that's what I want to do.

8 CHAIR MERRITT: Well, this is the benefit
9 of five independent board members, and I think it's
10 extremely important that each of you are expressing
11 where you are with this and also that I add that this
12 is not a done process; we're just beginning, and so
13 the outcome certainly is just the beginning of a
14 process in which we'll have more avenue for comment.

15 Dr. Poje.

16 DR. POJE: If I could just make one short
17 rejoinder to that, I also do believe in pushing for a
18 more pointed direction for the agency. I do want to
19 recognize, though, that the board, as a whole, will
20 judge the recommendation as either being met or not
21 met through a process of more formal evaluation by the
22 staff.

23 And it's my belief that if we project into
24 a very specific direction, we'll be able to hear the
25 agency come back with a better alternative, and our

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1 staff will analyze that and propose back to the board,
2 whether we accept that alternative or not, but I do
3 share Dr. Rosenthal's sense of a more specific pathway
4 of direction; still outcome-based would be helpful in
5 this situation right now.

6 DR. TAYLOR: But it's not outcome-based
7 when we say define membership in the class of highly
8 reactive substances; broaden coverage by creating a
9 class of highly reactive substances.

10 That's basically telling OSHA how to
11 regulate, and I'm saying that we -- this is one
12 possibility that we can include in our report as a
13 possibility but not make it as specific as it is
14 stated here in our recommendations.

15 CHAIR MERRITT: And to avoid a circular
16 discussion here --

17 DR. TAYLOR: Right.

18 CHAIR MERRITT: -- I would call for a
19 motion, then, to accept this amendment and a second.

20 DR. POJE: I make the motion to accept the
21 amendment as presented.

22 DR. ROSENTHAL: Can I second?

23 CHAIR MERRITT: You can.

24 DR. ROSENTHAL: I second it.

25 CHAIR MERRITT: You second. But you

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1 always want to be first.

2 DR. ROSENTHAL: Just goes to show you my
3 deep humility.

4 CHAIR MERRITT: Thank you.

5 At that time I would call for a voice
6 vote, please, concerning this amendment.

7 Dr. Taylor.

8 DR. TAYLOR: Disapprove.

9 CHAIR MERRITT: Dr. Rosenthal.

10 DR. ROSENTHAL: Approve.

11 CHAIR MERRITT: Dr. Poje.

12 DR. POJE: Approve.

13 CHAIR MERRITT: Mr. Bresland.

14 MR. BRESLAND: Disapprove.

15 CHAIR MERRITT: And I disapprove. So then
16 we can move on to the -- open again the floor to any
17 other discussion that there might be concerning the
18 rest of your comments on that first bullet.

19 DR. ROSENTHAL: Yes. I'll go on to the
20 next thing. I would like to, with the same heading,
21 add a third bullet item as an amendment, and that is
22 to adjust the elements of the PSM applicable to a
23 covered process to better address accident scenarios
24 that reflect the nature of the process: pure storage
25 versus intended physical or chemical transformation

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1 processes.

2 And what I'm intending to say is that I
3 think that, whereas as the PSM with the full process
4 has an analysis and all the elements in there are
5 effective and cost-effective for a process in which
6 there is the possibility of opening and deliberately
7 seeking to make chemical or physical change, that the
8 elements of a PSM that are applied to a process in
9 which the intent is to receive and trans-ship
10 materials should be different, and OSHA should make
11 allowances for this type of difference in process.

12 So that's the amendment.

13 CHAIR MERRITT: Okay.

14 DR. TAYLOR: Can I ask a question about
15 that for clarification?

16 CHAIR MERRITT: On this particular
17 recommendation, given that we've disapproved the first
18 portion, would this then be added after "broadened the
19 application" of the original staff?

20 DR. ROSENTHAL: It could be right after
21 that, the bullet item.

22 CHAIR MERRITT: Okay.

23 MR. WARNER: Just for clarification, so
24 you would be accepting the staff language and then
25 adding this right at the bottom of the staff bullet

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1 number 1.

2 DR. ROSENTHAL: Well, the board would be
3 accepting it, and this would be added under that.

4 DR. TAYLOR: Under bullet number 1. Okay.

5 DR. POJE: It would not be absent some
6 broader coverage request.

7 DR. ROSENTHAL: No.

8 CHAIR MERRITT: Okay. Are there any
9 comments? What my comment is is that I feel that --
10 you know, I tend to want broader language instead of
11 more specific language. While I think this is an
12 important potential, I don't feel it's necessary at
13 this point to change the language in order to have the
14 potential of this occurring during rulemaking, so I
15 don't think by adding this we've really --

16 DR. TAYLOR: Added anything to it.

17 CHAIR MERRITT: -- added much of anything.

18 Dr. Poje, do you --

19 DR. POJE: If I could just say, I am also
20 persuaded by this proposal from Dr. Rosenthal. Again,
21 I see the incidents that we have evaluated indicating
22 two very important domains of problems; one that
23 involve the chemical-process industries and the others
24 involving primarily a storage function and capacity,
25 and I think bringing that clarity to a proposal to the

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1 agency might enable a much more specific and
2 aggressive approach by the agency, should it accept
3 the wisdom of our recommendation to amend PSM, so I do
4 feel comfortable with this proposition.

5 CHAIR MERRITT: Okay.

6 Mr. Bresland.

7 MR. BRESLAND: My thoughts on this are
8 similar to Madam Chair's, in that I guess I don't
9 really understand what the purpose of this is. To me
10 it would seem it would unnecessarily complicate the
11 OSHA PSM regulation to differentiate between pure
12 storage and chemical transformations.

13 My feeling is if there's a chemical in
14 there that's covered by the PSM regulation, it's
15 covered by the PSM regulation regardless of whether
16 it's being used -- whether it's being stored or
17 whether it's being used in a chemical process.

18 And applying different criteria for
19 different types of operations, to me, would just make
20 the PSM regulation even more complicated than it
21 currently is, even though I feel it's a good
22 regulation as currently regulation.

23 DR. TAYLOR: That's what I had some
24 question about as well. I'm not understanding the
25 need to be specific, again, in this case.

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1 CHAIR MERRITT: Are there any other points
2 of comment?

3 (No response.)

4 CHAIR MERRITT: Then if not, someone
5 please make a motion to accept this.

6 DR. POJE: I make a motion to accept the
7 amendment as proposed.

8 CHAIR MERRITT: And a second?

9 DR. ROSENTHAL: Second.

10 CHAIR MERRITT: Then I would call for a
11 voice vote.

12 Dr. Taylor.

13 DR. TAYLOR: Disapprove.

14 CHAIR MERRITT: Dr. Rosenthal.

15 DR. ROSENTHAL: Approve.

16 CHAIR MERRITT: Dr. Poje.

17 DR. POJE: Approve.

18 CHAIR MERRITT: Mr. Bresland.

19 MR. BRESLAND: Disapprove.

20 CHAIR MERRITT: And I disapprove. So the
21 vote is three to two to disapprove this motion to
22 amend the recommendation.

23 There's one more?

24 DR. ROSENTHAL: One more.

25 CHAIR MERRITT: One more. Okay.

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1 DR. ROSENTHAL: Again, this would have to
2 be added. It says, To stimulate the use of inherently
3 safer designs or passive mitigation measures by
4 reducing regulatory requirements for processes that
5 use these approaches to eliminate any reasonable
6 likelihood of catastrophic releases in the event of a
7 prescribed worst-case scenario.

8 This would be an attempt -- my belief that
9 we ought to attempt to do what EPA does in Program 1,
10 where a process can be shown to be absent impacts on
11 workers -- in their case, the public -- that there
12 ought to be regulatory relief not requiring complete
13 adherence to things which then become secondary for
14 the main purpose of protecting workers, the public, or
15 the environment.

16 CHAIR MERRITT: Okay. Thank you.

17 Any other comments?

18 Dr. Taylor?

19 DR. TAYLOR: Given my experience with OSHA
20 and the fact that they are a regulatory agency,
21 they've not adopted, in my knowledge, as a member of
22 NACOSH [phonetic] and working with OSHA, reducing
23 regulatory requirements for regulation or exempting
24 companies from regulation -- that language would be
25 very troubling to me if we are making a recommendation

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1 specifically to do that as a result of inherent safer
2 design.

3 So from my perspective I would think that,
4 again, we don't want to tell them how to regulate or
5 what to do; that we not adopt this particular section.

6 CHAIR MERRITT: Dr. Poje.

7 DR. POJE: Yes. If I could just speak,
8 again I find myself allied with Dr. Rosenthal in this
9 proposition.

10 I do believe that the evolution of policy
11 for managing chemical safety is one that has now had
12 iterations that have involved Occupational Safety &
13 Health Administration and the Environmental Protection
14 Agency, and I believe that this would allow us to be
15 benefited from all the dialogue that occurred between
16 1992 and 1996 in seeking to make a more reasonable
17 approach towards what we already know will be a quite
18 complicated and very difficult area.

19 As was pointed out by one of the
20 commenters, enormous numbers of combinations and
21 permutations require some degree of rationalization
22 that I think this language, while still quite general,
23 works in concert with what has become an expectation
24 in chemical process policy, of having some ability to
25 mitigate the need for furthering documentation of

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1 aggressive pursuit of every aspect of process-safety
2 management, if you can opt out on the early end by
3 demonstrating you've used appropriately inherently
4 safer designs and passive mitigation measures.

5 So, again, I speak for it.

6 DR. TAYLOR: A question, though, I have.
7 How would -- from a regulatory standpoint, it's very
8 hard for me to envision how OSHA would regulate
9 companies on inherently safer design and how that
10 would work.

11 And, again, it would go back to my initial
12 comments regarding specificity versus letting OSHA
13 decide on how they're going to regulate. This is hard
14 for me to conceive.

15 DR. ROSENTHAL: May I respond to that?

16 CHAIR MERRITT: Certainly.

17 DR. ROSENTHAL: As a matter of fact, EPA
18 has managed to do it for 15,000 facilities, and the --
19 all the countries under the Seveso directive --

20 DR. TAYLOR: But EPA has more money.

21 CHAIR MERRITT: Dr. Taylor, please let Dr.
22 Rosenthal finish.

23 DR. TAYLOR: Sorry.

24 DR. ROSENTHAL: And the countries under
25 the Seveso directive also grant a similar exemption

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1 upon the demonstration of doing this, and EPA, in a
2 long letter from one of counsel, as well as the
3 European community, have chosen this in an effort to
4 make their regulations more cost-effective and to
5 endorse what exists as essentially elimination of
6 hazards rather than management, to go for engineering
7 controls of exposures rather than personal protective
8 equipment.

9 So I'm saying that this principle has well
10 been founded, has been successfully enforced by EPA
11 and by the European community and, I might add, has
12 been proposed by the State of New Jersey as well.

13 CHAIR MERRITT: Thank you.

14 Dr. Taylor.

15 DR. TAYLOR: Again, though, EPA and OSHA
16 are somewhat different in their structure, and when
17 we're talking about compliance officers going out to
18 the field to investigate, the question again comes
19 back in my mind: How would OSHA regulate such a
20 suggestion coming from us.

21 And I do have problems with the language
22 as well as removing or reducing regulatory
23 requirements. They've not done that in the past, and
24 it's very hard for me to envision them doing that,
25 given their staff, given how it would have to be

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1 regulated or how that would be done, and it's also a
2 more specific requirement that we're recommending.

3 CHAIR MERRITT: All right. Any other
4 comment?

5 MR. BRESLAND: Yes.

6 CHAIR MERRITT: Mr. Bresland?

7 MR. BRESLAND: Yes. Well, number one, I'm
8 in favor of the use of inherently safer designs and
9 also of passive mitigation. I doubt if there's
10 anybody in this room who would speak against that.
11 I'm also in favor of reducing regulatory requirements
12 where it's appropriate, but in reading this part off,
13 I just don't understand the connection, or I think it
14 will be difficult for OSHA to understand the
15 connection between the two.

16 And also, in the study done by the staff,
17 I don't believe that they did any study on the issue
18 of inherently safer design or passive mitigation as
19 related to this issue, and perhaps that something that
20 the safety board may want to investigate sometime in
21 the future as to what would the impact be and is there
22 a rationale for reducing regulatory requirements based
23 on that, but I think it would have to be done in a
24 much more serious and detailed manner than what we've
25 heard today.

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1 CHAIR MERRITT: If there are no other
2 comments, then I'd like to call for a motion to accept
3 the amendment.

4 DR. POJE: I make the motion to accept the
5 amendment as proposed.

6 CHAIR MERRITT: Is there a second?

7 DR. ROSENTHAL: Second.

8 CHAIR MERRITT: Then it has been -- the
9 motion has been made and seconded. A call for a voice
10 vote:

11 Dr. Taylor.

12 DR. TAYLOR: Disapprove.

13 CHAIR MERRITT: Dr. Rosenthal.

14 MR. BRESLAND: Approve.

15 CHAIR MERRITT: Dr. Poje.

16 DR. POJE: Approve.

17 CHAIR MERRITT: Mr. Bresland.

18 MR. BRESLAND: Disapprove.

19 CHAIR MERRITT: And I disapprove. The
20 changes to the amendment, then, are -- vote is for
21 disapproval, three to two.

22 So now, Mr. Warner, could you give us a
23 restatement now of recommendation 1 as it was --

24 MR. WARNER: Recommendation 1 stands as
25 presented by the staff in the executive summary.

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1 CHAIR MERRITT: Okay. And having been
2 seconded -- the motion made and seconded, I now call
3 for a vote for recommendation number 1.

4 Dr. Taylor.

5 DR. TAYLOR: Approve.

6 CHAIR MERRITT: Dr. Rosenthal.

7 DR. ROSENTHAL: Approve.

8 CHAIR MERRITT: Dr. Poje.

9 DR. POJE: Approve.

10 CHAIR MERRITT: Mr. Bresland.

11 MR. BRESLAND: Approve.

12 CHAIR MERRITT: And I approve. So the
13 amendment [sic] 1 is approved unanimously by the
14 board.

15 MR. JEFFRESS: No, the motion.

16 CHAIR MERRITT: I'm sorry. The
17 recommendation. The original -- thank you; it takes
18 three of us to do this.

19 So then I bring, then, the second
20 amendment --

21 MR. JEFFRESS: Second recommendation.

22 CHAIR MERRITT: -- second recommendation.

23 This is the recommendation to OSHA.

24 And at this point I would -- you know, it
25 would help -- is there a possibility you could put

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1 those on the screen so that folks from the audience
2 can maybe follow along a little bit better with what
3 we're doing?

4 I would call for a motion, then, to accept
5 amendment 2 -- I'm sorry -- recommendation 2.

6 DR. TAYLOR: Madam Chair, so moved.

7 CHAIR MERRITT: Thank you, Dr. Taylor.

8 Is there a second?

9 MR. BRESLAND: I second.

10 CHAIR MERRITT: Mr. Bresland seconds, and
11 with that, I open the floor to discussion. Is there
12 any discussion concerning recommendation 2?

13 DR. POJE: Madam Chair, I'd like propose
14 an amendment to recommendation number 2.

15 The amendment would be a modification to
16 the language in part; it would state: Number 2,
17 implement a program to define and record information
18 on reactive incidents that OSHA investigates or
19 requires to be investigated under OSHA regulations.
20 Structure the collected information so that it can be
21 used to measure progress in the prevention of reactive
22 incidents that give rise to catastrophic releases.

23 Can I offer some comments about this?

24 CHAIR MERRITT: Yes, please.

25 DR. POJE: Again, this would seek to build

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1 upon what is proposed by the staff at this moment in
2 time. They would recommend, as I would join them in
3 doing so, that we capture the -- that we encourage our
4 sister agency, OSHA, to more effectively capture
5 information on reactive hazard incidents through any
6 incident that they may investigate.

7 In this instance, though, I would seek to
8 expand upon that and to make it also incumbent upon
9 them to consider the capture of additional information
10 as is already required under the OSHA PSM standard for
11 facilities to investigate incidents of significance in
12 their own domain and to maintain records of such for
13 five years at that facility.

14 Here I would seek to have a broader access
15 to information beyond that that is currently
16 investigated by OSHA.

17 CHAIR MERRITT: So then do we have a
18 motion to accept this amendment?

19 DR. ROSENTHAL: I would like to just
20 comment and say that, considering that the facilities
21 now have to investigate the accidents, which is the
22 bulk of the resources being devoted to the added
23 feature that Dr. Poje suggested be collected, I think
24 it would be very cost-effective for OSHA to collect
25 that information and share it with the other parties

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1 who may experience similar things so that they can
2 learn from it.

3 CHAIR MERRITT: Is there other comment?

4 DR. POJE: If I could just make a comment
5 on top of that, though, again, I'm working within the
6 strict language as stated here, to implement a program
7 to define. Again, I don't want to prejudge the
8 resource base of the agency to comprehensively gather
9 all such information but rather the program that I
10 would seek to have us consider would be that the
11 agency would be responsible for examining that very
12 question.

13 The ability of our own staff to pursue 40
14 databases to try to give us a record of the past two
15 decades was an enormous effort and a very valuable and
16 valiant effort on their part, but I would see the
17 primary regulatory agency in this case also needing to
18 begin to better command the information required by
19 this regulation.

20 So please do not -- the intention is not
21 to automatically mandate that that become delivered
22 data to the agency, but it certainly would encompass
23 the potentiality for such, based upon further
24 evaluation and study.

25 CHAIR MERRITT: Is there further comment?

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1 Mr. Bresland?

2 MR. BRESLAND: Yes. I guess I don't
3 entirely -- based on Dr. Poje's most recent comment, I
4 don't entirely understand what we'd be voting on here.

5 Currently you've got, what, 15,000 RMP
6 facilities that are required to submit accident
7 history every five years, and EPA tells us that that
8 costs maybe 1 to \$2 million a year to implement that
9 program.

10 OSHA, by their estimate, has 25,000
11 facilities that are covered by the PSM regulation, and
12 if we were to, as the word says here, implement this
13 program, you would have 25,000 facilities that would
14 be required to -- at least as my understanding of what
15 Dr. Poje is suggesting, you would have 25,000
16 facilities that would be required to submit
17 information on their reactive incidents to OSHA, so
18 perhaps four or five a year for each of them, maybe
19 100,000 incident reports being sent in to a database,
20 which I think would probably overwhelm OSHA's current
21 ability to collect such information.

22 So it seems to me that we're going from
23 collecting very, very little information about
24 reactive chemicals, which I don't think is good, to
25 collecting huge amounts, which may not -- just may not

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1 be practical in today's world with the amount of
2 funding and manpower that OSHA has to oversee the OSHA
3 PSM program.

4 DR. TAYLOR: I wanted just to get a point
5 of clarification as a followup, John -- Gerry -- I
6 mean, Dr. Poje, on this --

7 DR. POJE: Sure.

8 DR. TAYLOR: On the last sentence -- it
9 appears that from the original text you're removing
10 the last sentence which says, At a minimum, identify
11 industry sectors that experience the incidents,
12 chemicals and processes involved, and consequences.

13 Right? And you're removing that and
14 saying that it should be broader for all of industry
15 or -- all of the chemical industry? I'm a little
16 confused on that.

17 DR. POJE: I'm just saying that I think
18 that that will be a logical outcome from this.

19 DR. TAYLOR: Okay.

20 DR. POJE: And, again, in the same spirit
21 of being more general on that aspect, that was
22 sufficient for me to structure the collected
23 information so that it can be used to measure
24 progress.

25 Progress will be defined by the gathering

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1 of such information, but I'm presuming there will be
2 many more such avenues to explore.

3 If I could just -- having clarified why
4 didn't include that, can I just respond also to John.

5 Again, I hope you understand the nature of
6 the specificity that I was making this recommendation.

7 It's my belief that the implement of program does not
8 automatically into a recommendation.

9 I'm not specifying, Collect every piece of
10 investigations already done to date. I believe it is
11 incumbent upon us to provide clarity of direction to
12 this agency who has heretofore not made abundant use
13 of investigative activities that are required under
14 the process-safety management regulation.

15 And I'm seeking to go one step broader
16 than the staff's proposal to us, which is to seek to
17 have the Occupational Safety & Health Administration
18 begin to grapple with how to best increase the value
19 of what we understand to be quite valuable, at this
20 board, the value of investigations, to better inform
21 entities and agencies on how to better manage process
22 safety.

23 CHAIR MERRITT: Is there any other
24 discussion?

25 (No response.)

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1 CHAIR MERRITT: Then if not, I would --
2 the amendment, as it stands, is to implement a program
3 to define and record information on reactive incidents
4 that OSHA investigates or requires to be investigated
5 under OSHA regulations; structure the collected
6 information so that it can be used to measure progress
7 in prevention of reactive incidents that give rise to
8 catastrophic releases.

9 DR. TAYLOR: So moved.

10 CHAIR MERRITT: So moved. Is there a
11 second?

12 DR. ROSENTHAL: Do we vote on Gerry's
13 amendment?

14 CHAIR MERRITT: This is it.

15 DR. TAYLOR: I moved.

16 DR. ROSENTHAL: Okay. Very good.

17 CHAIR MERRITT: Do you second?

18 DR. ROSENTHAL: I'll second.

19 CHAIR MERRITT: Okay. And then I would
20 call for a vote.

21 Dr. Taylor.

22 DR. TAYLOR: Approve.

23 CHAIR MERRITT: Dr. Rosenthal.

24 DR. ROSENTHAL: Approve.

25 CHAIR MERRITT: Dr. Poje.

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1 DR. POJE: Approve.

2 CHAIR MERRITT: John Bresland.

3 MR. BRESLAND: Approve.

4 CHAIR MERRITT: Carolyn Merritt: I
5 approve.

6 And so these changes carry with a
7 unanimous vote.

8 Then we go to the recommendations to EPA,
9 and recommendation number 1 is -- do I have a motion
10 to accept?

11 DR. TAYLOR: So moved; accept the
12 recommendation.

13 CHAIR MERRITT: Do I need to go back?

14 MR. JEFFRESS: Wait a minute. We voted on
15 the amendment.

16 CHAIR MERRITT: Yes. Now I need to go
17 back and approve number 2 altogether. Thank you.

18 All right. Do we have a motion, then, to
19 accept, as amended, the recommendation number 2 to
20 OSHA.

21 DR. ROSENTHAL: So moved.

22 DR. TAYLOR: Second.

23 CHAIR MERRITT: Very good. And then we
24 have a voice vote for that.

25 Dr. Taylor.

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1 DR. TAYLOR: Approve.

2 CHAIR MERRITT: Dr. Rosenthal.

3 DR. ROSENTHAL: Approve.

4 DR. POJE: Approve.

5 MR. BRESLAND: Approve.

6 CHAIR MERRITT: Approve.

7 So it's carried five to approve.

8 All right. Then we move on, then, to
9 recommendation number 1 to the EPA. Right? And do I
10 have a motion to accept this amendment -- this
11 recommendation, and a second?

12 DR. TAYLOR: I move that we accept the
13 recommendation from the staff.

14 CHAIR MERRITT: Okay. And is there a
15 second?

16 MR. BRESLAND: I second.

17 CHAIR MERRITT: John Bresland seconds.

18 This is open for discussion. Is there any
19 discussion concerning this recommendation?

20 DR. ROSENTHAL: Once again I'll overcome
21 my natural shyness and offer a suggested change.

22 I've looked at these two recommendations.
23 I know the thrust of them. I believe, however, they
24 are unnecessarily complex and include some elements
25 which can be expressed more clearly and more

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1 succinctly in a different fashion, which I would like
2 to put forward and defend or to explain why I believe
3 it does it.

4 I propose that this recommendation be
5 revised to read as follows: Revise the chemical
6 accident prevention programs, 40 CFR 68, to explicitly
7 cover catastrophic hazards that have the potential to
8 seriously impact the public, including those resulting
9 from self-reactive accidents and combinations. Take
10 into account -- no, let's see.

11 Take into account --

12 CHAIR MERRITT: The recommendations this
13 report has made --

14 DR. ROSENTHAL: Yes, right --
15 recommendations this report has made to OSHA on
16 reactive hazard coverage. Seek congressional
17 authority, if necessary, to amend the regulation; this
18 is deemed necessary.

19 Okay. That one is the first one.

20 CHAIR MERRITT: That's the only one we're
21 going to take at this time.

22 So is there --

23 DR. POJE: Can I speak to --

24 CHAIR MERRITT: Yes. You want to speak to
25 that?

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1 DR. POJE: The rationale.

2 CHAIR MERRITT: What's the rationale for
3 that, Irv, the change?

4 DR. ROSENTHAL: Well, I think that we
5 should ask EPA to take into account the
6 recommendations that OSHA has made or will make when
7 they go through this regulation, so that we don't have
8 two incompatible lists.

9 CHAIR MERRITT: Okay. Are there any other
10 discussion on this?

11 DR. POJE: Again, if I can just repeat
12 what I said earlier, I believe there has been an
13 iteration of policy development at the federal level
14 that has involved sequentially action by OSHA and
15 subsequent action by EPA.

16 I believe that we would also be seeking
17 through this, particularly in the language that would
18 say "take into account the recommendation that this
19 report has made to OSHA on reactive hazard
20 coverage" -- again, seeking to have a degree of
21 harmony between the two agencies in their approach to
22 managing the common problem of reactive hazards,
23 whether it be to protect the workforce or to protect
24 the public at large.

25 CHAIR MERRITT: Is there any other

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1 discussion on this?

2 MR. BRESLAND: As I understand it, Irv,
3 the significant change that you've made in this is
4 you've included the section on explicitly covering
5 catastrophic reactive hazards that have the potential
6 to seriously impact the public.

7 DR. ROSENTHAL: Right. That's implicit.
8 I put it in because EPA [indiscernible] the public,
9 but just as they have gone to toxics and flammables
10 without specifically stating that, it's implicit in
11 the regulation.

12 I think the point is for them to
13 explicitly cover reactives, and I should say that
14 affect the public, but that's implied, because they
15 can't do anything else, and that they should take into
16 account what OSHA is doing.

17 MR. BRESLAND: But in the staff
18 recommendations they also ask that it be taken into
19 account what OSHA's doing.

20 DR. ROSENTHAL: Yes.

21 MR. BRESLAND: Okay.

22 DR. TAYLOR: So it basically sounds like
23 it's a change in wording a little bit to make it
24 stronger, explicitly cover --

25 DR. ROSENTHAL: To include catastrophic --

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1 seek congressional authority, if necessary, to amend
2 the regulation.

3 Again, I will leave it up to them to do
4 that, since I think there is a question I've heard
5 expressed of opinion as to whether they need it or not
6 need it, and I am stating the end condition.

7 CHAIR MERRITT: All right. Is there any
8 other discussion?

9 DR. POJE: Just one other point that I
10 think is elevated in Dr. Rosenthal's proposal, is that
11 also more explicitly states, in parallelism to the
12 issues raised in the OSHA recommendation, those
13 resulting from self-reactive chemicals and
14 combinations of chemicals and process-specific
15 conditions.

16 So it does step one further step to
17 encompass all of the potentialities.

18 CHAIR MERRITT: Okay. Then do we have a
19 motion to --

20 DR. POJE: I make a motion to accept the
21 amendment as proposed.

22 MR. WARNER: Madam Chair, could I read the
23 amendment --

24 CHAIR MERRITT: Yes.

25 MR. WARNER: -- just to clarify the

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1 language.

2 The amendment now reads -- I believe, Dr.
3 Rosenthal -- Revise the chemical accident prevention
4 programs, 40 CFR 68, to explicitly cover catastrophic
5 reactive hazards that have the potential to seriously
6 impact the public, including those resulting from
7 self-reactive chemicals and combination of chemicals
8 and process-specific conditions.

9 Take into account the recommendations this
10 report has made to OSHA on reactive hazard coverage.
11 Seek congressional authority, if necessary, to amend
12 the regulation if this is deemed necessary.

13 CHAIR MERRITT: And we have a motion to
14 accept the amendment as read?

15 DR. TAYLOR: I --

16 CHAIR MERRITT: You so move? We already
17 did that. Second?

18 DR. ROSENTHAL: I do.

19 CHAIR MERRITT: All right. And then I
20 call a voice vote.

21 Dr. Taylor.

22 DR. TAYLOR: Approve.

23 CHAIR MERRITT: Dr. Rosenthal.

24 DR. ROSENTHAL: Approve.

25 CHAIR MERRITT: Dr. Poje.

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1 DR. POJE: Approve.

2 CHAIR MERRITT: Mr. Bresland.

3 MR. BRESLAND: Approve.

4 CHAIR MERRITT: And I approve. It's
5 carried. Then the amendment is carried.

6 Now we --

7 DR. POJE: May I make a motion to accept
8 the amendment as the recommendation to OSHA -- to EPA?

9 I think that's what we did on the --

10 CHAIR MERRITT: Yes. The recommendation
11 as amended.

12 DR. POJE: The recommendation as amended.

13 I make a motion we accept that.

14 DR. TAYLOR: Second.

15 CHAIR MERRITT: That's already been done,
16 so -- oh, yes, thank you. That's right. We do
17 require that.

18 One more step is to vote.

19 DR. TAYLOR: Approve.

20 DR. ROSENTHAL: Approve.

21 DR. POJE: Approved.

22 MR. BRESLAND: Approved.

23 CHAIR MERRITT: Approve.

24 All right. So that one is approved.

25 Thank you. I hope some of these are simpler.

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1 All right. Then we move to recommendation
2 number 2 from the EPA, and that's up on the board;
3 thank you. Is there a motion to accept the
4 recommendation 2 to the EPA? We need to make that
5 motion first and then second it and then if there are
6 any amendments --

7 DR. TAYLOR: Oh, I make a motion to
8 accept; sorry.

9 CHAIR MERRITT: Thank you. And is there a
10 second?

11 MR. BRESLAND: Second.

12 CHAIR MERRITT: John Bresland seconded it.
13 And then I open the floor to discussion. Is there
14 any discussion concerning this recommendation?

15 DR. ROSENTHAL: Yes. I have some -- an
16 amendment I would like to offer. Now, there are two
17 bullet items under that recommendation. Could you
18 show those, please. Yes.

19 Of course, the recommendation that I want
20 to offer encompasses the two bullet items as well as
21 the paragraph.

22 CHAIR MERRITT: Yes. Okay. Good. Thank
23 you for that clarification.

24 DR. ROSENTHAL: So I think it's necessary
25 to have that for clarity.

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1 And I would like to suggest the following,
2 and then I'll state why: Modify the accident
3 reporting requirements, the RMP info, to define and
4 record reactive incidents. Consider adding the term
5 reactive incident to the four existing release
6 elements in EPA's current five-year accident reporting
7 requirements, which I just list for information: gas,
8 liquid, fire, and explosion.

9 Structure this information collection to
10 allow EPA and its stakeholders to identify and focus
11 resources on industry sectors that experience the
12 incidents, chemicals and processes involved, impact on
13 the public, the workforce, and the environment.

14 What I'd like to say as a note is that the
15 RMP infodata system now could do all of this as it's
16 presently structured, provided there was a class of --
17 for around which this was collected which was
18 reactive. They don't have reactive things now.

19 If they put this in, then the same number
20 of forms, the same number of investigations; it would
21 be no additional cost. They would just have a place
22 in which they entered information which presumably
23 would be available.

24 I think that the requirements that they
25 require reporting of reactive incidents that involve

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1 both regulated and nonregulated reactive hazards is
2 somewhat confusing, because, as we discussed during
3 our questions of the staff, once and if they regulate
4 reactive hazards, those will be the ones they can
5 collect on.

6 If they don't ever regulate them, they
7 will have to get a new bill, not just authority, in
8 order to get data on things that they do not regulate.

9 So I think the amendment as I stated basically has
10 the same thing; it says involve those which are
11 regulated chemicals and have reactive incidents, even
12 though they're not classified as reactive, and as well
13 as any reactive hazards that they had as a result of
14 our first recommendation to EPA.

15 CHAIR MERRITT: Are there comments?

16 Dr. Taylor?

17 DR. TAYLOR: We are also including, At a
18 minimum, identify --

19 CHAIR MERRITT: Yes.

20 DR. TAYLOR: Correct? That goes on there.

21 DR. ROSENTHAL: Yes.

22 MR. WARNER: I thought you said this
23 replaces all of this.

24 CHAIR MERRITT: No.

25 DR. ROSENTHAL: Yes, it does. Of course,

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1 it does say -- it says, Identify and focus resources
2 on industry sectors that experience the incidents,
3 chemicals and processes involved. That's in my
4 amendment.

5 DR. TAYLOR: So it's all there. Okay.

6 CHAIR MERRITT: So it's all in here
7 without having to have those two --

8 DR. POJE: The second bullet is amended.

9 CHAIR MERRITT: Okay.

10 MR. BRESLAND: So this is a more narrowly
11 focused recommendation than the staff's
12 recommendation?

13 DR. ROSENTHAL: In that sense, yes.

14 MR. BRESLAND: Because the staff is
15 recommending that EPA would require reporting for both
16 regulated and nonregulated --

17 DR. ROSENTHAL: I don't know how you
18 require reporting for nonregulated, but --

19 MR. BRESLAND: So in your amendment you
20 would require just the incidents that are reported
21 every five years as part of RMP --

22 DR. ROSENTHAL: The ones that are
23 presently reported, and if they add reactive hazards,
24 those that would be required when these chemicals were
25 added to the list.

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1 MR. BRESLAND: But some of those incidents
2 may move from, let's say, a fire or an explosion
3 category into reactive --

4 DR. ROSENTHAL: Yes. It will just be a
5 better classification, John.

6 MR. BRESLAND: Okay.

7 CHAIR MERRITT: Is there any other
8 discussion?

9 (No response.)

10 CHAIR MERRITT: Then I call for a motion
11 to accept the amendment.

12 DR. POJE: I make a motion to accept the
13 amendment as proposed?

14 CHAIR MERRITT: A second.

15 DR. TAYLOR: I was confused. I second, I
16 guess.

17 CHAIR MERRITT: Okay. Then I would call
18 for a voice vote on the amendment to recommendation
19 number 2, which actually replaces recommendation
20 number 2. Correct?

21 VOICES: Yes.

22 CHAIR MERRITT: Dr. Taylor.

23 DR. TAYLOR: Approve.

24 CHAIR MERRITT: Dr. Rosenthal.

25 DR. ROSENTHAL: Approve.

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1 CHAIR MERRITT: Dr. Poje.

2 DR. POJE: Approved.

3 CHAIR MERRITT: Mr. Bresland.

4 MR. BRESLAND: Approved.

5 CHAIR MERRITT: And I disapprove. So the
6 amendment is carried, four to one.

7 All right. So we have a motion, now, to
8 accept the amendment as the recommendation and a vote
9 on the recommendation?

10 DR. POJE: I so move that we accept the
11 amended language as the recommendation to EPA on the
12 matters of incident reporting.

13 CHAIR MERRITT: Thank you. Is there a
14 second?

15 DR. TAYLOR: Second.

16 CHAIR MERRITT: All right. And then, Dr.
17 Taylor?

18 DR. TAYLOR: Approve.

19 CHAIR MERRITT: Dr. Rosenthal.

20 DR. ROSENTHAL: Approve.

21 CHAIR MERRITT: Dr. Poje.

22 DR. POJE: Approved.

23 CHAIR MERRITT: John Bresland.

24 MR. BRESLAND: Approved.

25 CHAIR MERRITT: And I approve.

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1 All right. Let's see. Where are we? Now
2 we go to the National Institute of Standards and
3 Technologies. And may I make a recommendation that we
4 accept it -- we take these en masse because there are
5 so many, and if I'm not mistaken, unless there are
6 recommendations for amendments that we can bring up at
7 the time of discussion, if there are none, then we'll
8 vote on them in masse.

9 If not, then we'll take out whichever one
10 has to be amended.

11 So I call for a motion to accept
12 recommendations to the National Institute of
13 Technology, Center for Process Safety, American
14 Chemistry Council --

15 DR. POJE: Synthetic Organic Chemical
16 Manufacturers Association.

17 CHAIR MERRITT: Yes -- SOCMA, and the --

18 DR. POJE: National Association of
19 Chemical Distributors, the International Association
20 of Firefighters --

21 CHAIR MERRITT: Yes.

22 DR. POJE: -- the Paper, Allied-
23 Industrial, Chemical and Energy Workers International
24 Union --

25 CHAIR MERRITT: Yes.

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1 DR. POJE: -- the United Steelworkers of
2 America --

3 CHAIR MERRITT: Yes.

4 DR. POJE: Union of Needle Trades
5 Industrial and Textile Employees; United Food and
6 Commercial Workers International Union; and the
7 American Society of Safety Engineers.

8 CHAIR MERRITT: Thank you; so nicely
9 stated. Is there a second?

10 DR. ROSENTHAL: Second.

11 CHAIR MERRITT: Is there any discussion on
12 any one or any of these recommendations?

13 DR. TAYLOR: Based on the recommendation
14 that Irv asked earlier, perhaps where we say,
15 Communicate to your membership, such as ASSE, we can
16 either say, And other professional associations, or
17 add the American Industrial Hygiene Association.

18 DR. POJE: If I could make a
19 recommendation on that, I would rather be specific
20 right now to the American Industrial Hygiene
21 Association --

22 DR. TAYLOR: Okay.

23 DR. POJE: -- but I also would like to
24 observe that I think the board at any time can seek to
25 reopen its discussion about recommendations emanating

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1 from this report.

2 And if there is a logical redirection that
3 we could have, particularly on this issue of building
4 awareness, we can certainly entertain that at a future
5 date.

6 DR. TAYLOR: Okay.

7 DR. POJE: So rather than say, in general,
8 to others, I would rather be specific.

9 DR. TAYLOR: Okay. Since they're left
10 out, and there are representatives here: American
11 Industrial Hygiene Association.

12 CHAIR MERRITT: All right. But we have
13 a -- you would need to make that a specific amendment.

14 DR. TAYLOR: I move that we amend the list
15 of recommendations and add, after the American Society
16 of Safety Engineers, the American Industrial Hygiene
17 Association, AIHA.

18 CHAIR MERRITT: And is there a second?

19 DR. ROSENTHAL: Second.

20 CHAIR MERRITT: Then let's have a voice
21 vote that we add the organization that Dr. Taylor
22 recommended in her amendment.

23 Dr. Taylor.

24 DR. TAYLOR: I move that we --

25 CHAIR MERRITT: No. You approve?

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1 DR. TAYLOR: Approve.

2 DR. ROSENTHAL: Approve.

3 DR. POJE: Approve.

4 MR. BRESLAND: Approve.

5 CHAIR MERRITT: Approve.

6 All right. And then we can go to the
7 motion that accepts as amended --

8 MR. BRESLAND: Can I -- a point of
9 clarification on two of the recommendations, and
10 they're both -- they're similar wording. One is to
11 the American Chemistry Council, and the other is to
12 SOCMA, and it's recommendation 2 in each case.

13 And I'll just read the first few words; it
14 says, Develop and implement a program for reporting
15 reactive incidents.

16 My understanding of that is that is
17 internal reporting within the organizations, and it's
18 not external reporting to the agency -- to any
19 agencies.

20 CHAIR MERRITT: Yes. That is correct.

21 MR. BRESLAND: Is that everybody else's
22 understanding?

23 DR. POJE: That's my understanding of
24 that.

25 DR. ROSENTHAL: Yes.

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1 MR. BRESLAND: Okay.

2 MR. JEFFRESS: But you might want to read
3 the rest of that sentence, though. The rest of the
4 sentence says that includes the sharing of the
5 relevant safety knowledge and lessons learned with
6 your membership, the public, and the government.

7 So the individual reports would not be
8 shared, but the lessons learned would be.

9 DR. ROSENTHAL: Yes. Which I presently
10 believe is now being done by those associations now as
11 a matter of public policy; they share the lessons
12 learned.

13 DR. POJE: But most explicitly we would
14 not be asking them to share those reports.

15 DR. ROSENTHAL: To share the individual
16 reports, which are treated as confidential. But I
17 believe that the general information is matter of
18 public policy, and the ACC and the CMA and everyone
19 before them always tried to do that. They wouldn't
20 always succeed, but --

21 CHAIR MERRITT: Does that answer your
22 question?

23 MR. BRESLAND: Yes.

24 CHAIR MERRITT: Then can we proceed to a
25 vote to accept the recommendations as amended?

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1 DR. POJE: I make a motion to accept the
2 recommendations as amended.

3 DR. TAYLOR: Second.

4 CHAIR MERRITT: Okay.

5 Dr. Taylor.

6 DR. TAYLOR: Approve.

7 DR. ROSENTHAL: Approve.

8 DR. POJE: Approved.

9 MR. BRESLAND: Approved.

10 CHAIR MERRITT: Approved.

11 The next step, then, is to do a board vote
12 on the executive summary and the recommendations as
13 amended, en masse, and so I would call for a motion to
14 accept the executive summary and the amendments -- the
15 recommendations as amended.

16 DR. POJE: So moved.

17 DR. TAYLOR: Second.

18 DR. ROSENTHAL: Just with the provision
19 that any minor editorial changes will be included in
20 your motion, Gerry?

21 DR. POJE: Yes.

22 DR. ROSENTHAL: Okay.

23 CHAIR MERRITT: Okay.

24 MR. BRESLAND: And also the executive
25 summary does include the recommendations as originally

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1 written by the staff.

2 CHAIR MERRITT: Yes. That's what it would
3 do, is we would --

4 MR. BRESLAND: Oh, amended?

5 CHAIR MERRITT: -- change that to the
6 amended.

7 MR. BRESLAND: Okay.

8 CHAIR MERRITT: So we're recommending --
9 we're -- the motion is to accept the recommendations
10 with the -- accept the executive summary with the
11 recommendations as amended.

12 MR. WARNER: Just to clarify, we have
13 amended the recommendation number 2 to OSHA,
14 recommendation number 1 to EPA and number 2 to EPA,
15 and we have added the American Hygiene [sic]
16 Association as one of the associations getting the
17 report and distributing it to its membership.

18 CHAIR MERRITT: Okay. That has been moved
19 and seconded, and so we would call for a vote.

20 Dr. Taylor.

21 DR. TAYLOR: I have a question. Is this
22 the part where we ask?

23 CHAIR MERRITT: Yes.

24 DR. TAYLOR: It would be. Okay. Are we
25 going to also approve the report, too, or no?

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1 CHAIR MERRITT: No, not yet.

2 DR. TAYLOR: Okay.

3 CHAIR MERRITT: That will be done in a --
4 as a notation.

5 DR. TAYLOR: Okay.

6 CHAIR MERRITT: The final report will be
7 done as a notation.

8 DR. TAYLOR: Okay. Then I approve.

9 DR. ROSENTHAL: Approve.

10 DR. POJE: Approve.

11 MR. BRESLAND: Approve.

12 CHAIR MERRITT: Approve.

13 So the vote for the acceptance of the
14 executive summary with the recommendations as amended
15 is, Approved unanimously.

16 At this point -- Dr. Taylor, you have a
17 question?

18 DR. TAYLOR: I still have a question
19 regarding the approval of the report. I see the staff
20 over saying, Oh, does that mean there are a whole lot
21 of changes coming to the actual report document?

22 I think what we're saying, there are still
23 just some editorial things that have to be changed in
24 the report before we have a notation item to vote.

25 CHAIR MERRITT: That's right.

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1 DR. TAYLOR: Okay. Minor editorial
2 changes.

3 CHAIR MERRITT: This report and its
4 recommendations are a landmark for the board. In time
5 I hope that they'll be seen as a landmark for the
6 progress of the chemical -- of chemical safety as
7 well.

8 Since the process safety regulations were
9 first promulgated a decade ago, there's been a notable
10 hole in the coverage of reactive hazards. The board's
11 recommendations today mark a first step in closing
12 that hole and implementing new standards that
13 ultimately will save lives.

14 In my view the board's recommendations
15 strike an appropriate balance, calling for robust and
16 specific regulatory actions, while giving the
17 regulators sufficient flexibility to craft effective
18 solutions.

19 Our recommendations also emphasize the
20 vital role that industry itself must play in reducing
21 the severity of reactive hazards.

22 I look forward to working closely with
23 ACC, SOCMA, NACD, and CCPS to further their efforts in
24 controlling reactive hazards.

25 Under the terms of the Clean Air Act, OSHA

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1 and EPA now will have 180 days to consider the board's
2 new recommendations. I'll begin an immediate dialogue
3 with Secretary Henshaw and Administrator Whitman to
4 promote the implementation of board's recommendations
5 and course of action.

6 While I'm optimistic that the EPA and the
7 Labor Department will react positively, I remain fully
8 cognizant of the difficult road that lies ahead.
9 Achieving effective comprehensive coverage of reactive
10 hazards is not an easy proposition. If it were, it
11 would have been done a long time ago.

12 The board's investigation makes a
13 compelling case for changing the way reactive hazards
14 are regulated and managed, but our work is primarily
15 technical and scientific in nature.

16 I'm extremely pleased, therefore, at the
17 positive response that we have had from bipartisan
18 political leaders for pursuing improvements to process
19 safety.

20 Representative Mike Castle and Senator Joe
21 Biden and Senator Jon Corzine have appeared recently
22 at board meetings, and they have spoken of the need
23 for additional measures to prevent chemical accidents.

24 This past July Senator Paul Wellstone
25 convened an OSHA oversight hearing where he stressed

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1 his desire for continued development of new OSHA
2 safety standards. He specifically cited the need to
3 expand process safety coverage to include reactive
4 hazards.

5 I believe there's significant recognition
6 within the industry also that more needs to be done,
7 and I look forward to continuing to work with all
8 parties to achieve that common goal.

9 The reactive hazards investigation was a
10 collective effort that has involved many and every
11 corner of our agency. I'd like to single out Mr.
12 William Hoyle, director of investigations and safety
13 programs, for his outstanding work in designing,
14 directing, and overseeing this complex and lengthy
15 investigation. Bill, you have the gratitude of the
16 entire board, and there he is right there.

17 I'd like to equally thank the
18 investigative team: lead investigator John Murphy;
19 staff investigator Lisa Long and Giby Josephs, and
20 also Kevin Mitchell. All of them made a significant
21 contribution over the last two years. This is a piece
22 of work you can all be proud of.

23 I'd also like to recognize the important
24 contribution of Mr. Don Holmstrom, the agency lead
25 recommendations specialist. Never has the agency

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1 faced a more daunting challenge in developing
2 recommendations and, as usual, Don, you have stepped
3 up and you have done an exemplary job.

4 Finally, the chair and the board owe a
5 debt, again, of gratitude to Dr. Poje and to Chris
6 Warner, who was interim leader in responsibility for
7 the investigation until this past summer, when Mr.
8 Jeffress came on.

9 Likewise, Dr. Rosenthal has made many
10 invaluable technical contributions to this work. To
11 all of you I offer my sincere thanks.

12 Now, with that, I know everyone's hungry
13 and hoping for a break. We have a brief bit of other
14 board business that we must conclude, and with no
15 other comments, I'd like to move to the next part of
16 our business, and that is the consideration of our
17 revised performance plan for fiscal year 2003.

18 Mr. Jeffress will give the board a
19 presentation on that, and then we will put it to a
20 vote.

21 MR. JEFFRESS: Thank you, Madam Chair.
22 And in the interests of time, I will make this very
23 brief.

24 Members of the board and the staff and
25 those of you in the audience who are on the CBS

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1 automailer list have seen the revised performance
2 plan/action plan for this coming fiscal year that we
3 have been working on.

4 The strategic plan that the board adopted
5 in the year 2000 covered a strategic list of actions
6 and the strategic plans for the next five years.

7 We have revised that plan, with more
8 experience, so that for the fiscal year 2003 we have a
9 specific set of strategic actions which we propose to
10 engage in, and this action plan requires the board
11 approval.

12 The plan was developed by the staff;
13 notices were emailed to our automailer list. A number
14 of public comments were received; we adopted a number
15 of those comments. Some of those public comments are
16 more appropriate for a five-year plan than for the
17 next year, so we will reserve them for consideration
18 of our five-year plan.

19 I will go over briefly -- this is in your
20 notebooks under the tab that says Strategic Plan.
21 You'll find the plan for action. Again, just briefly
22 covering the highlights of it, the CSB mission core
23 purpose is to protect workers, the public, and the
24 environment by investigating and preventing chemical
25 accidents.

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1 Our mission goal one: to produce timely
2 high-quality investigation reports, bulletins and
3 studies and use them as a basis for effective
4 prevention recommendations.

5 Under that mission goal I would point out
6 the key strategies which we are adopting for this
7 coming year. First: attract, develop, and retain a
8 team of highly skilled staff, such as you see before
9 you, to implement and update our investigative
10 protocols, action selection procedures, and data
11 utilization as needed. And finally the key strategy
12 under mission goal one: to establish effective
13 working relationships within the agency and with key
14 stakeholders to improve the efficiency and
15 effectiveness of chemical safety investigations.

16 Now, we have eleven specific actions under
17 that mission goal one. I'm not going to read all of
18 them. I would call your attention to two significant
19 ones, I think.

20 First, we'll be hiring six new
21 investigators for the fiscal year, which will almost
22 double our investigatory capacity of the agency. And
23 we are working and will work this coming year to
24 develop the Chemical Safety Board's appropriate role
25 in the vulnerability assessments of plants to

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1 terrorism -- potential terrorist threats.

2 Mission goal two: Again, overall mission
3 goal is to achieve wide industry implementation of the
4 CSB recommendations and related accident prevention
5 measures. The key strategies here, again: developing
6 effective relationships with stakeholder groups, aimed
7 at achieving implementation of our accident-
8 investigation recommendations.

9 And also, for the first time, this year we
10 will develop and implement a tailored multiyear
11 approach for each CSB investigation. This is targeted
12 at a sharing, adoption, and strategic dissemination of
13 the CSB recommendations.

14 So for the first time, for each time we do
15 an investigation and develop recommendations, we'll
16 also develop an outreach plan to reach out and make
17 sure that the implementation -- that the
18 recommendations are understood and implemented.

19 And I would point -- again there are a
20 number of specific actions. I would point to two to
21 highlight for you. First we're going to establish a
22 system to track CSB safety accomplishments and,
23 secondly, that we will successfully close 75 percent
24 of the recommendations that the board makes.

25 Our final goal, number three, maintain a

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1 high-performing work environment to ensure effective
2 mission accomplishment. And again this relates
3 primarily to our internal operations of the agency.

4 I would point to two specific initiatives
5 this year: One, establishing a comprehensive human
6 resources program for the agency that would encompass
7 incentives and awards, training and development for
8 the staff; recruitment, hiring, diversity awareness; a
9 list of appropriate human resource goals.

10 And secondly, and important perhaps for
11 people in the audience and others who follow our
12 activities, that we expect this year to develop a new
13 plan for the next five years; to develop a strategic
14 plan to go from 2003 to 2008.

15 And we'll be asking not only, of course,
16 for board and staff participation but for public
17 participation in that process.

18 Madam Chair, I submit this action plan to
19 you and to the board for your approval.

20 CHAIR MERRITT: Thank you, Mr. Jeffress.

21 Is there a motion to accept the plan for
22 2003?

23 DR. POJE: So moved.

24 DR. ROSENTHAL: Just one comment --

25 CHAIR MERRITT: Is there a second?

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1 DR. ROSENTHAL: Yes.

2 CHAIR MERRITT: You second?

3 DR. ROSENTHAL: Yes.

4 CHAIR MERRITT: Okay. Are there any -- is
5 there any discussion?

6 DR. ROSENTHAL: Yes.

7 (General laughter.)

8 DR. ROSENTHAL: I think the goals set
9 forth are quite good, but I think that we do need to
10 get greater stakeholder inputs and emphasis on the
11 second goal. I think mission goal one is difficult,
12 but I think the quality of reports we put out show
13 that we've learned how to master that; perhaps we
14 should be more cost-effective and et cetera, et
15 cetera.

16 But I think it is in the second one that
17 we can benefit by inputs and discussion and
18 development, and so I agree with it, but I just
19 suggest that as an area which needs amplification and
20 greater input.

21 CHAIR MERRITT: Do you have any specific
22 recommendation that we need to consider at this point?

23 DR. ROSENTHAL: No. I think wait further
24 discussion that can take place, but I don't think it
25 should be done as a specific thing. I would like to,

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1 after discussion with the board members, consider
2 holding roundtables or public meetings or collecting,
3 systematically, inputs from other stakeholders on how
4 to do this.

5 CHAIR MERRITT: But you're not making an
6 amendment --

7 DR. ROSENTHAL: I'm not making it in the
8 form of a motion --

9 CHAIR MERRITT: -- to the plan at this
10 point.

11 DR. ROSENTHAL: -- until I've had a chance
12 to get input from the other board members.

13 DR. POJE: Madam Chair, just to emphasize
14 on that point, when we did prepare our first five-year
15 strategic plan, we did hold roundtable discussions
16 with others about the plan before we finally adopted
17 it.

18 CHAIR MERRITT: Then if there is no other
19 discussion or not amendments or recommendations to the
20 plan, then I call for a vote.

21 Dr. Taylor.

22 DR. TAYLOR: Approve.

23 CHAIR MERRITT: Dr. Rosenthal.

24 DR. ROSENTHAL: Approve.

25 CHAIR MERRITT: Dr. Poje.

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1 DR. POJE: Approved.

2 CHAIR MERRITT: Mr. Bresland.

3 MR. BRESLAND: Approved.

4 CHAIR MERRITT: And I approve. It's
5 carried unanimously. Thank you.

6 So then -- excuse me for rushing along,
7 but what I would like to do -- we have -- the next
8 point of business is open status of recommendations to
9 the different --

10 MR. HOLMSTROM: Recipients.

11 CHAIR MERRITT: Yes. And I guess my
12 question -- in the matter of time, is there a way that
13 we can take these en masse without having to go
14 through each one of them?

15 MR. HOLMSTROM: I know the hour is late,
16 and I'm sure people are hungry. I think we could --
17 each recommendation there's different proposed status
18 assignments to several different recommendations.

19 We can either do it at this particular
20 meeting, or if the time is short, perhaps we could
21 postpone this and include these -- the recommendations
22 status designation at the next public meeting.

23 CHAIR MERRITT: Go ahead and speak loud
24 and explain how we could do this in a proper way.

25 MR. WARNER: The board could vote on this

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1 in a variety of ways. They could take these
2 recommendations back, review them and, through a
3 notation item, vote individually on them.

4 Or we could defer this action until the
5 next public meeting if that was a suggestion from the
6 board.

7 DR. POJE: May I ask a question? Is it
8 possible for us to, after we review them, talk to
9 other board members individually about their opinion
10 on this and have not heard any disagreement with the
11 staff's proposition -- is there a way for us to
12 approve them en banc?

13 CHAIR MERRITT: Yes. We can do it through
14 notation item with the board, and if you -- I think
15 what we would probably want to do is make a
16 recommendation or a motion, then, to take these items
17 in a notation with the board vote done that way.

18 DR. ROSENTHAL: I just would like to -- I
19 think I would agree with that, but may I ask just one
20 question, which would be, are there any issues in here
21 which are controversial which you absolutely -- well,
22 not absolutely -- which you need board inputs
23 presently, or is there -- are these actions such that
24 there will be no significant impact on safety, health
25 or progress if we delay a week and do it by notation

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1 items?

2 MR. HOLMSTROM: Irv, I think there's
3 issues here that probably deserve some discussion, and
4 I would say whether it's deferred to a notation, that
5 individual board members can approach the
6 recommendation staff individually, and we can raise
7 those issues.

8 Or if it's deferred to the next meeting,
9 we can more fully develop those at that time.

10 DR. ROSENTHAL: My question: Is there
11 anything that would significantly impact if it's
12 delayed a week?

13 MR. HOLMSTROM: I guess I'm answering the
14 question a different way. I'm saying there's issues
15 that need to -- that would need to be raised, I think,
16 and discussed.

17 CHAIR MERRITT: I think --

18 MR. BRESLAND: May I make a comment? I --
19 this is my first opportunity to review
20 recommendations, and I think it would be worthwhile at
21 some -- not today, because we are running out of time
22 here -- at some later date in the near term future,
23 take a little more time to hear what you have to say
24 about them and describe them to us.

25 MR. HOLMSTROM: Okay.

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1 DR. TAYLOR: I was going to make a motion
2 that we hold on them and they be presented at our next
3 public meeting, which is in October.

4 CHAIR MERRITT: No. Our next public
5 meeting is in November.

6 DR. TAYLOR: Oh. Well, then --

7 DR. ROSENTHAL: It has to be done by
8 notation item.

9 CHAIR MERRITT: I think it has to be done
10 by notation item.

11 DR. TAYLOR: Okay. I move that we --

12 CHAIR MERRITT: You move that we --

13 DR. TAYLOR: -- do notation items.

14 CHAIR MERRITT: -- table the discussion
15 today --

16 DR. TAYLOR: Table the discussion.

17 CHAIR MERRITT: -- and do a notation item
18 vote on these recommendations within the next two
19 weeks.

20 DR. TAYLOR: Yes.

21 DR. POJE: Second it.

22 CHAIR MERRITT: Second it.

23 And I would ask for a vote, then.

24 Dr. Taylor.

25 DR. TAYLOR: Approve.

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1 DR. ROSENTHAL: Approved.

2 DR. POJE: Approved.

3 MR. BRESLAND: Approved.

4 CHAIR MERRITT: Approved.

5 Then I thank you all for your -- I know
6 you were prepared to give us a presentation on that,
7 and we will have to meet with you individually before
8 our notation, then, on items that you feel are things
9 you need to raise to our attention, and then we will
10 schedule that with the staff within the next two weeks
11 and have the vote complete, then, by two weeks from
12 today.

13 Thank you.

14 With that, I congratulate all of you for
15 hanging in there. This is a public board meeting; it
16 is not a public hearing. And I hope that you learned
17 something and you appreciate a little better working
18 of your board. And we do work for you, and we
19 appreciate your participation in this meeting.

20 And with that, I declare this meeting
21 closed.

22 (Whereupon, at 1:00 p.m., the public board
23 meeting was concluded.)

24

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