U.S. CHEMICAL SAFETY BOARD

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AL SOLUTIONS DUST FIRE AND EXPLOSION UPDATE ON FREEDOM INDUSTRIES

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PUBLIC MEETING

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WEDNESDAY,
JULY 16, 2014

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U.S. CHEMICAL SAFETY BOARD MEMBERS PRESENT:

RAFAEL MOURE-ERASO, Ph.D., Chairperson,
U.S. Chemical Safety Board
MARK A. GRIFFON, Member, U.S. Chemical Safety Board

STAFF PRESENT:

DANIEL M. HOROWITZ, Ph.D., Managing Director
RICHARD C. LOEB, General Counsel
JOHNNIE BANKS, CFEI, Supervisory Investigator
LUCY TYLER, CSP, Investigator

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CERTIFICATE

MATTER: AL Solutions Dust Fire and Explosion Update on Freedom Industries Public Meeting

DATE: July 16, 2014

I hereby certify that the attached transcription of pages 1 to 135 inclusive are to the best of my belief and ability a true, accurate, and complete record of the above referenced proceedings as contained on the provided audio recording.

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Adjourn
PROCEEDINGS

(12:00 p.m.)

CHAIRPERSON MOURE-ERASO: Good afternoon and welcome to this public meeting of the U.S. Chemical Safety Board, the CSB. I am Rafael Moure-Eraso, Chairperson of the Board and joining me today is Board Member Mark Griffon.

Also joining me at this table is the general counsel of the Chemical Safety Board Mr. Richard Loeb and to my right there is the CSB staff that prepared the reports and who's -- and also more CSB staff that is around here that facilitated this meeting.

I am going to ask the team lead of the CSB staff to introduce each and every member of the team when we get to the point of the presentation.

The CSB for everybody that has known us during the past has known that we are an independent non-regulatory federal agency that investigates major chemical accidents on
fixed facilities.

We are an investigatory agency.

The investigations examine all aspects of chemical accidents including physical causes related to equipment design as well as inadequacies in regulations that are designed to supposedly prevent these accidents.

We also look at inadequacies on industry standards and inadequacies on safety management systems that rule the operation of process and safety in a chemical operation.

Ultimately we use safety recommendations which are designed to prevent similar accidents in the future. And they are given, the recipients of our recommendations are each one of these groups that I mentioned before, industry, regulators and organizations that prepare and work on voluntary standards.

Today we are following the agenda that you saw at the entrance. The meeting today is divided in two parts. In the first part we are going to present the result of our
investigations in the accident in AL
Solutions, and we are going to have some
comments from the Board, and we are going to
ask for some questions from people present
here to address the accident of AL Solutions.

After those presentations we are going to take a vote to decide on if the Board will finally approve the results of -- the findings and the recommendations of the investigation.

Once we finish that vote we will have an intermission and then we proceed to make a presentation on the Freedom Industries action or Freedom Industries investigation. That is going to be done by the same team that produced the report in AL Solutions.

And after that presentation that is basically a progress report of our investigation we will have some comments and questions of anybody that would like to say something.

I remind you that we have to limit
the comments to three minutes per person so
that everybody has a chance to have their say.
And we beg of you not to take anymore of that
time.

You are welcome to submit for us
some written comments if you would like.

You probably saw at the entrance
there are copies of our report. It's called
"The AL Solutions, Inc., Metal Dust Explosion
and Fire."

This report, the accident occurred
in December 2010. As you will see in the
second page it's dedicated to the three men
that lost their lives in that incident in
December 9, 2010.

At this time I will have to ask
for a moment of silence to remember these
three individuals that were killed as a result
of the accident in New Cumberland, West
Virginia in AL Solutions.

I will now read their names.

James Eugene Fish, Jeffrey Scott Fish and
Steven Swain.

(Moment of Silence)

CHAIRPERSON MOURE-ERASO: Thank you. So we continue with the agenda as I described it before.

I remind you about the public comment period that we would like to ask you to divide your comments. If you have comments for AL to present it in the first part of the meeting, and if you have comments for Freedom Enterprises to present it in the -- after the intermission.

Before we begin we always point out some basic safety information that we -- you have to be aware that in addition to the door that you entered there are some emergency doors on the side. We have two in this side and three on the other side. If we need to evacuate the room be aware of these emergency exits.

I will also ask to please mute your cell phones so that we don't interrupt
the proceedings.

The December 9, 2010 accident at the AL Solutions is the object of our investigation.

This facility milled and processed two metals, titanium and zirconium. And in the course of a fire and explosion three people were killed and a contractor was injured.

The incident is one of nine serious combustible dust incidents investigated by the CSB since 2003.

These explosions and fires across the United States has caused 36 deaths and 128 injuries. This is in the past 10 years.

The CSB investigation determined that AL Solutions experienced a history of fatal dust fires and explosions.

The CSB learned that the AL Solutions facility had fatal fires and explosions involving metal dust in 1995 and in 2006 in addition to the 2010 explosions that
we investigated.

Also, from 1993 until the accident in 2010 there were at least seven fires that required responses from the local fire department.

The CSB is calling on the industry that manufacture and handle metal dust and combustible dust in general to take action to prevent these kind of combustible dust incidents.

In July 2003 the CSB identified its 2006 recommendation to develop a combustible dust standard as the first issue in its most wanted chemical safety improvement outreach program.

It is my view that had OSHA implemented the first CSB recommendation for a combustible dust standard in 2006, and if industry had followed the requirements of such a standard many of the severe dust incidents that followed including AL Solutions may have been prevented.
The time is now for OSHA to take action to prevent these tragic accidents.

On the issue of this investigation if anyone would like to comment publicly on the investigation there is a sheet that I am asking you to sign so that we can know who is going to be talking.

And as I said, I will request that you plan your remarks for three minutes.

Now, I would like to recognize my fellow Board member Mark Griffon for some opening statements. Mark?

MR. GRIFFON: Thank you, Mr. Chairman.

Today we are here to discuss two incidents that occurred in West Virginia.

First of all, I would like to express my condolences to the friends and family of the three workers that were killed in the incident at the AL Solutions facility.

This is yet another tragedy resulting from a combustible dust explosion,
an issue for which the Board since 2006 has recommended that a federal safety standard is needed.

It is very troubling that we are here reporting on yet another combustible dust incident and reissuing a recommendation for a federal safety standard.

I agree with the Chairman that the time for action is now.

For the Board's part I plan to work with my colleagues on the Board to continue to advocate for the development of such a federal combustible dust standard.

The Freedom Industries incident was a very different type of incident. This incident so clearly illustrates how industrial safety intersects with environmental and public health issues.

The impact on this community was tremendous and still the community is left with many questions.

Our focus at the CSB is to look at
the causes that led to the spill of the hazardous chemicals which ultimately got into the drinking water.

While we are not conducting studies of the health and environmental impacts of the spill, we will be reviewing the available information regarding health impact and looking at possible gaps in regulations which address the public's exposure to toxic materials and the environmental impact of such materials.

I look forward to the hearing today and hearing both on the AL Solutions report and also on our investigative team's update on the Freedom Industries investigation. Thank you, Mr. Chairman.

CHAIRPERSON MOURE-ERASO: Thank you. I would like also to recognize that two members of the families of workers that were killed in the AL Solutions incident are here present with us.

And I would like to tell them that
we appreciate that they came here to hear us. And I personally give them my condolences. They are here.

Also, Senator Rockefeller has been one big supporter of our Chemical Safety Board historically and we have been in constant contact with him at his office informing of our investigations.

And we have been requested by Mr. Wes Holden from the Office of the Senator that he would like to give a message from Senator Rockefeller. So Mr. Holden, please.

MR. HOLDEN: Thank you, Mr. Chairman. On behalf of Senator Rockefeller I want to thank the Chemical Safety Board for their final report and recommendations regarding the investigation into the December 2010 explosion at AL Solutions in New Cumberland, West Virginia, that took the lives of three people, Jeffrey Fish, James Fish, Steven Swain.

Completing that investigation is
not a simple task and we are very grateful for
their work.

As we all know when the 2010
explosion occurred the employees at AL
Solutions were working with titanium powder,
a highly flammable substance.

Because this is a highly flammable
industrial powder it is more difficult for
fire fighters to extinguish the fire and any
hot spots before they could reach the
employees trapped inside.

This tragic incident combined with
the Freedom Industries chemical spill further
highlights the utmost importance of chemical
safety.

Over six months have passed since
the January spill. And as everyday activities
such as bathing, cooking slowly resume we
appreciate the people who are still working on
the ground day by day to understand what
happened.

The information they are gathering
is vital to understanding the next steps we need to take toward implementing the right safeguards so we can protect our communities from accidents like this in the future.

As I said, I firmly remain committed to getting answers to many unanswered questions related to the January spill.

I'm committed to working to strengthen regulations and to properly funding and staffing oversight agencies, two of the utmost components in preventing a disaster like this from happening.

Following the January spill at Freedom Industries site I immediately called on the Chemical Safety Board to investigate the spill.

I also asked my colleagues on the Senate Appropriations Committee on the Fiscal Year 2014 federal funding package to allocate $11 million for the Chemical Safety Board's operations.
As a result of the misguided federal budget cuts, or sequestration, I knew the funding constraints placed on the Chemical Safety Board like all of our federal agencies and operations would severely restrict the Board's ability to fully respond to my request.

Fortunately, Congress passed the 2014 spending bill with my request for full Chemical Safety Board funding despite an attempt by the House of Representatives to slash nearly $2 million from the Board's already anemic budget.

In addition to calling for an investigation of the spill I took action legislatively by joining Senators Joe Manchin and Barbara Boxer in introducing the Chemical Safety and Drinking Water Protection Act, legislation that would require a regular inspection of chemical storage tanks.

I also introduced two bills with Senator Brian Schatz that seek to hold
companies like Freedom Industries accountable
when spills of non-hazardous substance like
MCHM occur and provide state and federal
governments with funding to help cover the
cost of cleaning up the chemical spill.

I want to thank the Chemical
Safety Board for swiftly responding to this
incident as they have done many times in the
past for West Virginia, and for their
transparency throughout this process.

It is my hope that the Chemical
Safety Board's recommendation following the AL
Solutions incident and the conclusion of the
Freedom Industries investigation we have
implemented with this agency.

And again, thank you on behalf of
Senator Rockefeller for allowing me to make
this statement at this time.

CHAIRPERSON MOURE-ERASO: Thank
you very much, Mr. Holden.

I also would like to thank the
staff of Senator Manchin and Congressman
Capito that are attending the meeting today. We really appreciate you being here. We have worked very closely with your offices in informing you of our activities.

At this time I would like to introduce the investigative team. With us here is a person that is becoming very well known in the State of West Virginia. That is Mr. Johnnie Banks which is the supervisory investigator for both the AL Solutions and Freedom Enterprises here.

Mr. Banks is based in Washington, D.C. and he came to the agency, to the CSB after 22 years working for the Chevron Texaco Corporation Refinery in Richmond, California, prior to joining us.

He is a graduate of the University of California at Berkeley and he is a certified fire and explosion investigator.

With him is Ms. Lucy Tyler who is a certified safety professional and has participated in several CSB investigation and
support the development of significant
recommendations for combustible dust
regulations and changes to various industry
standards.

She holds a bachelor of science
degree in industrial health and safety from
the Pennsylvania State University.

Also with us is Mr. Mark Wingard.

He is a graduate of Clemson University with a
bachelor of science in chemical engineering.

Mr. Wingard has worked with the
Johnson & Johnson Company doing research and
development for active pharmaceutical
ingredient production and worked as a waste
management engineer at the Savannah River
nuclear facility.

Also with us is Ms. Christine
Morgan which -- that is perhaps the better
well known in our organization as the soul of
recommendations. She is right now in charge
of the recommendations department for the time
being and she has a lot of input on the type
of investigations that we do in our recommendations, and also in the following up of the recommendations to ensure that they are acted upon on the groups that we make recommendations to.

I would like now to ask Mr. Banks to start the program of -- and add whatever he wants to what I have said to the presentation of his team and do the AL Solutions investigation presentation. Mr. Banks?

MR. BANKS: Mr. Chairman, Board Member Griffon, Mr. Loeb, ladies and gentlemen, good afternoon.

The AL Solutions investigation team has prepared several findings from our investigation of the combustible dust explosion which occurred at the AL Solutions facility in New Cumberland, West Virginia.

This incident occurred on December 9, 2010 and resulted in the death of three workers and one worker injury.

Following this presentation the
Board will vote and we'll also provide a brief update on the Freedom Industries incident investigation.

Before I start I'd like to take a moment to just go over our agenda which the Chair has touched on.

We'll begin with the team's presentation of the investigation findings from the AL Solutions case.

The team will then entertain questions from the Board. The public will be invited to offer comments on the case. And the Board Members will then vote on the team's proposed findings and recommendations.

After the Board vote we'll have a short intermission and the team will then present an update on the Freedom Industries incident investigation.

And finally, we'll have a closing comment from the Chair.

Now, before I start I'd like to again introduce the team that has been
involved with the AL Solutions and a portion of the team from the Freedom Industries case. The team includes myself, Johnnie Banks. I'm the incident investigation team lead, Mr. Mark Wingard is one of our investigators, and Ms. Lucy Tyler who is also one of our investigators.

Rounding out the team today is Ms. Christina Morgan who is our recommendations specialist and who will follow through on the recommendations once the investigative phase has been closed out. Her department will make sure that those recommendations are indeed brought to closure and that they're recorded as such.

In looking at the presentation the team will discuss the company background and provide an overview of the facility, and present an incident animation that shows the details of the incident, the investigation findings and then we'll introduce the proposed recommendations at the end of the
In looking at AL Solutions, the AL Solutions processes titanium and zirconium scrap metal into pressed compacts that aluminum producers use as alloy additives.

AL Solutions obtains scrap titanium and zirconium from manufacturers and end users, adds the pressed compacts to furnaces or molten metal to increase the strength of aluminum alloys.

At the time of the incident AL Solutions owned and operated two processing facilities. The primary office and production facility was located in New Cumberland, West Virginia.

AL Solutions also has a facility for milling in Washington, Missouri.

When the incident occurred in 2010 AL Solutions employed 23 workers at the New Cumberland facility and 2 at the Washington facility. After the incident AL Solutions stopped production at the New Cumberland
facility and has a new production facility located in Pennsylvania.

Now, as shown here the New Cumberland facility lies on the east bank of the Ohio River in the northern panhandle of West Virginia. It lies approximately 40 miles west of Pittsburgh, Pennsylvania.

The New Cumberland site contains a main production facility, a warehouse, outside storage area, laboratory and office area.

Now, the next portion of the presentation will be conducted by my colleague Mr. Wingard who will walk you through the process overview and other aspects of operation.

MR. WINGARD: Thank you, Mr. Banks.

Shown in this slide is a process overview, simplified flow diagram of the AL Solutions process.

AL Solutions took raw material, shown here, from drums shipped by suppliers,
broke this metal down and removed the oxide
layer in a mill, blended the milled metal and
then pressed it into compacts for sale.

This process required four
operators, one supervisor who ran the mill,
one operator to operate the blender, and two
operators to run the three presses that formed
the compacts.

At the time of the AL Solutions
incident employees were processing titanium
zirconium scrap metal.

Titanium is a widely used metal
with unique flammability characteristics.
Fine titanium particulates are easily ignited
in air and can ignite spontaneously under
certain conditions.

An AL Solutions material safety
data sheet for titanium powder recommended
having procedures in place to keep the powder
away from static charges, sparking equipment
and ignition sources.

Zirconium also carries a
significant flammability hazard and it can also auto-ignite in air at room temperature. Under certain conditions dust clouds, very small concentrations of zirconium can be explosible.

After the incident the CSB commissioned combustible dust testing of materials from the AL Solutions facility to determine whether the metal powder contributed to the fire and explosion.

This testing determined that zirconium and titanium samples in use at AL Solutions were combustible and could produce a fire or metal dust deflagration.

CSB investigators observed and documented the production building after the incident and concluded that the fire damage and deformations caused by the explosion over-pressure were consistent with a metal dust explosion.

Most solid organic materials as well as some metals and even some non-metallic
inorganic materials will burn or explode if
finely divided and dispersed in sufficient
concentrations.

Even seemingly small quantities of
accumulated dust can cause catastrophic
damage.

Like all fires, a dust fire occurs
when fuel, in this case the combustible dust
is exposed to heat in the presence of oxygen.

Removing any one of these elements
of the classic fire triangle which is shown
here eliminates the possibility of a fire.

A dust explosion requires two more
elements, dust dispersion and confinement.
Suspended dust burns more rapidly and
confinement enables pressure buildup. Removal
of either the suspension or the confinement
element can prevent an explosion although a
dust fire can still occur.

We'll now show an animation of the
December 2010 incident.

(Whereupon, the animation was
MR. WINGARD: That was an excerpt from a video. The full video will be available on the CSB website soon after this meeting.

AL Solutions employees noted mechanical problems with the blender in the days prior to the explosion.

As stated in the video, blender paddles were striking the wall of the blender, causing scoring that was evident after the incident.

Despite the fact that the blender was striking the wall AL Solutions did not effectively repair or replace the blender to avoid exposing combustible metal dusts to sparks or heat produced by the mechanical impact from the paddles.

On the day of the incident the blender likely contained a substantial quantity of zirconium dust.

Indications of burned residue and
char on the ceiling above the blender and the
presence of burning deposits on the wall
behind the blender suggest that zirconium
particulates lofted from the blender and
ignited other materials in the room.

As stated previously, after the
incident the CSB collected samples with
titanium and zirconium from various areas of
the processing unit at the New Cumberland
facility.

Combustibility testing was carried
out in accordance with NFPA 484. This testing
concluded that the metal powder was
combustible and capable of causing a dust
flash fire or explosion.

The CSB investigation found that
AL Solutions had no dust collection system to
collect and control metal dust accumulating
from the process.

Instead, operators relied on the
use of water sprays and wash-downs to manage
dust accumulations.
However, this practice is not recommended for water-reactive materials such as zirconium and titanium dust due to the hazards associated with the formation of hydrogen gas when metals are heated.

Additionally, AL Solutions lacked any mechanical ventilation system to control hydrogen gas accumulations which could potentially lead to explosive atmospheres.

Prior to the 2010 incident the New Cumberland facility experienced two fatal incidents involving the ignition of metal dust.

From 1993 until the December 2010 incident the New Cumberland Volunteer Fire Department responded to at least seven fires at AL Solutions.

Through interviews the CSB learned that several other fires occurred at the New Cumberland facility that did not result in a fire department response.

In fact, almost all employees
reported to CSB investigators that they had witnessed one or more fires in the production building.

In August of 1995 one employee was killed and another was injured in an explosion and fire at the New Cumberland facility. A leaking propane tank and undetermined ignition source caused this fire. The propane tank ignited, generating a blast wave that lofted titanium dust within the production building. This dust ignited and caused a secondary explosion that further ignited dust in the building.

In July of 2006 a supervisor was fatally injured while cleaning out the inside of the mill tank when residual metal in the mill ignited.

OSHA conducted an investigation as a result of both of these incidents and levied fines on the facility for serious safety violations.

However, citations did not mention
industry standards such as NFPA 484 to address the failure to control metal dust hazards.

I'll now turn the presentation over to Lucy Tyler.

MS. TYLER: AL Solutions is not the only facility that has suffered fatalities and injuries from combustible dust incidents. From 2008 until 2013 the CSB has identified 50 combustible dust incidents that resulted in 29 deaths and 161 injuries.

One notable dust incident outside that time frame was the CTA Acoustics dust explosion that resulted in seven deaths in 2003.

Many of these incidents have been investigated by the CSB and repeated recommendations have been made to OSHA to promulgate a combustible dust standard.

However, these recommendations have not been addressed.

In the aftermath of three catastrophic dust incidents in 2003 that
claimed the lives of 14 workers the CSB launched a combustible dust hazard study and recommended that OSHA develop a general industry standard for combustible dust in 2006.

Since 2006 the CSB has recommended that OSHA publish a final combustible dust regulation for general industry based on NFPA Standard 654 and 484.

Despite these repeated recommendations and fatal dust incidents since the issuance of the recommendation OSHA has not issued a final dust standard.

OSHA has recognized the need and importance of the standard, and in the past has made steps towards promulgating the standard, but it has been delayed.

And you can see from this timeline here in November 2006 the CSB made the original recommendation to OSHA to develop a combustible dust rule. And in April 2009 OSHA announced that they would begin rulemaking.
In September 2009 at the completion of the Imperial Sugar investigation the CSB recommended OSHA proceed expeditiously with the dust rule.

In April 2010 OSHA called the dust standard a long-term action but postponed some of the next steps of the rulemaking process.

In June 2012 OSHA stated that it could not commit to a date for the proposed rule, but it remains a top priority for the agency. That was two years ago.

Since then OSHA has scheduled and rescheduled the next steps of the rulemaking process.

The CSB incident screening department has collected and verified combustible dust incidents from 2008. And from 2008 to 2012, over that time frame that the rulemaking has been delayed 50 combustible dust incidents that resulted in fatalities and injuries took place in general industry.

Here is a graph that depicts the
number of the combustible dust incidents, injuries and fatalities since the re-issuance of the combustible dust National Emphasis Program, or NEP, after the catastrophic sugar dust explosion at Imperial Sugar in 2008.

And you can see from the chart here that there is no visible decline in the number of incidents or the severity of incidents over this time frame. And this data is based on dust incidents collected by the CSB's incident screening department.

In July 2013 the CSB voted and declared that OSHA's response to the previous combustible dust recommendation was unacceptable because OSHA has yet to develop even a proposed rule on combustible dust hazards more than four years after it committed to start rulemaking.

The 2006 recommendation to OSHA was classified as open-unacceptable in the July 2013 CSB public meeting.

The need for an OSHA combustible
dust standard became the first item on the CSB most wanted chemical safety important program adopted by the Board at the July meeting.

If OSHA had implemented the first CSB recommendation for the standard in 2006 many of the severe dust incidents that followed, including AL Solutions, may have been prevented.

In the next portion of this presentation I will read the investigation key findings.

Key finding number one for AL Solutions. The explosion in the production building was caused by combustible titanium and zirconium dusts that were processed at the facility.

Number two. The explosion likely originated in a blender containing milled zirconium particulates and ignited by frictional heating of the zirconium arising from defective blender equipment.

Key finding three. The hydrogen
gas produced by the reaction of molten
titanium and zirconium metal and water,
possibly from wash-down operations or the
water deluge system may have also contributed
to the explosion.

Number four. Testing conducted
after the incident determined that titanium
and zirconium samples collected from the AL
Solutions facility were combustible and were
capable of causing an explosion when lofted
near an ignition source.

Key finding five. AL Solutions
did not mitigate the hazards of metal dust
explosions through engineering controls such
as a dust collection system. Specifically, AL
Solutions did not adhere to the practices
recommended in NFPA 484 for controlling
combustible dust hazards.

Key finding six. The West
Virginia area office of OSHA did not conduct
a combustible dust NEP inspection at the AL
Solutions facility before the 2010 incident,
despite the company's history of metal dust incidents.

The combustible dust NEP inspections are based on a randomized selection of facilities regardless of previous incidents unless initiated by a complaint or a referral.

And finally, key finding seven. Combustible dust incidents continue to occur throughout susceptible industries, but the next steps of the OSHA rulemaking process for promulgating a general industry combustible dust standard have been delayed.

And now our recommendation specialist Christy Morgan will come to the podium to read our draft recommendations.

MS. MORGAN: As a result of this investigation the investigative team is proposing that the CSB reiterate one of its previous recommendations to the Occupational Health and Safety Administration and issue four new recommendations, two to AL Solutions,
Inc., at the corporate level and two to the new AL Solutions facility now operating in Burgettstown, Pennsylvania.

First, I will discuss the recommendation that the staff is posing for reiteration.

The CSB continues to believe that an OSHA general industry standard for combustible dust is needed to prevent future tragedies caused by dust explosions.

Therefore, staff are proposing that the Board reiterate its 2006 recommendation calling for the development and issuance of an OSHA general industry standard for combustible dust.

As Ms. Tyler mentioned, the Board voted to designate this recommendation and three related recommendations with the status open-unacceptable response in July 2013.

The Board also voted at that time to designate a general industry standard for combustible dust as the agency's first most
wanted chemical safety improvement.

It should be noted that this will be the first time in the history of the agency that the CSB has reiterated one of its previous safety recommendations.

The text of this recommendation is as follows.

"Issue a standard designed to prevent combustible dust fires and explosions in general industry.

"Base the standard on current National Fire Protection Association, or NFPA, dust explosion standards including NFPA 654 and NFPA 484, and include at least hazard assessment, engineering controls, housekeeping, building design, explosion protection, operating procedures and worker training."

In addition to proposing that the Board reiterate this 2006 recommendation to OSHA, the team is proposing that the Board issue four new recommendations.
The first recommendation is to AL Solutions, Inc., and it reads as follows.

"For all new and existing equipment in operations at AL Solutions facilities that process combustible metal dust or powders apply the following chapters of NFPA 484, 2012 edition, standard for combustible metals: Chapter 12 Titanium, Chapter 13 Zirconium, Chapter 15 Fire Prevention, Fire Protection and Emergency Response, and Chapter 16 Combustible Metal Recycling Facilities."

The second proposed recommendation to AL Solutions reads as follows.

"Develop training materials that address combustible dust hazards and plant-specific metal dust hazards, and then train all employees and contractors. Require periodic, for example, annual, refresher training for all employees and contractors."

The first proposed recommendation to AL Solutions' Burgettstown, Pennsylvania
facility is as follows.

"Prohibit the use of sprinkler systems and water deluge systems in all buildings that process or store combustible metals."

And our last recommendation also to the AL Solutions Burgettstown facility reads as follows.

"Conduct a process hazard analysis as defined in NFPA 484 Section 12.2.5 and submit a copy to the local fire department or the enforcing authority for the fire code."

Mr. Chairman, this concludes the staff's presentation on the AL Solutions incident.

CHAIRPERSON MOURE-ERASO: Thank you very much, Ms. Morgan. And following our agenda we will have an opportunity for the Board to ask questions to the investigative team. So, Mr. Griffon, do you have any questions?

MR. GRIFFON: Yes. Thank you, Mr.
Chairman. Just a couple of questions.

The report makes a few recommendations that we just went through here to AL Solutions Company.

I'm just curious if you know what they've done since 2010. Have they put any controls in place? Any training? Is there any update on what they've done since the incident?

MR. WINGARD: They have made changes in the Burgettstown. Still doesn't seem to us that it's in line with NFPA 484.

A lot of it was eliminating -- making it more automated. So eliminating the frequency of time people spend in contact with the process itself. And so really, instead of eliminating the combustible dust hazard they eliminated just people as much as possible.

MR. GRIFFON: And anything on the training front? Or was it mainly moving employees away from the operation that was the focus?
MR. WINGARD: I think it's mainly moving people away from the operation. But I can't speak to the training now.

MR. GRIFFON: And just one other one on the OSHA recommendation. You know, I totally support reissuing the recommendation for a federal standard. And it's been out there for a long time.

I think we have to play a more active role in advocacy for this. It's on our most wanted list. I think the Board has to move on that as well.

But I'm just curious what OSHA has done. I know it's mentioned a little in the report, but what OSHA has done short of issuing a standard obviously. They had some activities. I just wondered if you could tell us a little about that.

MS. TYLER: Yes, sure. Over the last couple of weeks we've had a couple of discussions with OSHA in discussing the reiterated recommendation.
And we've learned through those discussions that in addition to working toward the combustible dust rule OSHA has been involved in several activities to increase awareness of combustible dust among industry, emergency responders such as fire fighters as well as their compliance officers. And all of this guidance to date has been -- it's non-regulatory.

But starting in 2008 after Imperial Sugar they published a fact sheet on some general combustible dust hazards. They mailed alert letters to 30,000 employers across the country that handle combustible dust. They published a combustible dust hazard communication guide, a manual for firefighting precautions. And they've had some additional training for compliance officers and compliance assistance staff, and that's ongoing as part of the National Emphasis
Program that they developed in October 2007.

And additionally, they've created a combustible dust website through osha.gov which has all the resources for combustible dust. So that's some of the activities that they've been involved in.

MR. GRIFFON: Thank you, thank you. And just one follow-up on that. Did AL Solutions -- would they have received any of these communications? The 30,000 that you mentioned, would AL Solutions have received this information before the 2010 incident?

MS. TYLER: I'm not 100 percent certain that they did, but know that the 30,000 letters that were sent out are based on the industry code classifications that would likely be handling the I guess most highly hazards combustible dust materials. And we do know that their industry code was on that list I believe under the standard industrial classification list. So it is possible that they may have received it but I'm not 100
percent certain.

MR. GRIFFON: Yes, I'd be surprised if they didn't. But anyway, thank you for answering those questions.

CHAIRPERSON MOURE-ERASO: Thank you, Mr. Griffon.

I just would like to follow up with a question in that vein. The recommendations that have come from the federal government on combustible dust so far has been recommendations that the users or the people handling combustible dust should volunteer to embrace them and use them or not. And it is voluntary for people to do it since there is not a federal regulation that will compel them to do it.

So my question to you is how will an OSHA combustible standard that is a regulation will have contribute to prevent an explosion like happened in AL Solutions.

MS. MORGAN: In 2006 the CSB's recommendation to OSHA in creating the
combustible dust rule was to incorporate the
provisions that exist in NFPA 484 and 654.
They are industry consensus standards that
have provisions for preventing dust explosions
or fires.

So we feel that if OSHA were to
incorporate this into a combustible dust rule
companies would have defined requirements to
follow and they would be enforceable
requirements for the prevention of dust
accumulations for engineering controls, for
flame-resistant clothing, all the types of
company practices that you would expect
employers to follow when handling combustible
dusts.

CHAIRPERSON MOURE-ERASO: Thank
you very much. At this time we would like to
ask if anybody from the public would like to
make some comments on the AL Solutions
investigation.

As we normally do here I'm going
to ask our managing director if he could like
to direct the discussion and to invite people
to make any statement. A three-minute
statement, please.

I would like to remind everybody
that we'll request that you make your comments
on AL Solutions now and that you make -- you
have any comments on Freedom Enterprise to
please wait until the end of the presentation
that will happen after the intermission.

So, Dr. Horowitz.

DR. HOROWITZ: Thank you, Mr. Chairman.

The first commenter is John Morawetz of the International Chemical Workers Union.

MR. MORAWETZ: Thank you. One,
just a comment on process. Sitting here I
just got the report when I got here. I'm
trying to look at the report, hear the
presentations and figure how to formulate questions.

So on a statement which I think
I've said before on process it would be very helpful for the public, all interested parties, family members to get a copy of the report in advance, maybe embargoed, not for publication, so we can make comments and look at it thoughtfully to have some input on then the final vote and final deliberation.

It's also possible I would hope that you could also say there's a vote provisionally perhaps based upon the comments that all of us may or may not present and you analyze them and you figure out where you want to go with that.

I'll also -- I have a number of points in trying to follow this that I would like to make and I'll put them in writing. I know there's a limit of three minutes.

I was a little bit puzzled in looking at all the recommendations that, first of all, fully supporting the OSHA combustible dust standard, long overdue, that all the other recommendations are only for AL
Industry.

One of the strengths of the Chemical Safety Board historically has been that your reports are for the industry. Your reports are broad and they're far-reaching.

I know, for instance, the explosion in Hawaii, the fireworks explosion, that it was a very good recommendation about the contracting out, and how contracting by the federal government should take into account a company's history in health and safety.

So, I would wonder in particular whether there's a combustible metal recycling industry, group, et cetera, organization that our recommendations could be made to beyond AL Industry. I don't know whether anybody wants to respond?

MR. BANKS: I believe we made some recommendations along those lines in a recent report.

I think we did make such
recommendations for education in our Hoeganaes report. And I'll just ask the team to clarify if that is so.

There are certain industry organizations that handle combustible metals or powdered metals.

MR. MORAWETZ: So, limited in time I would just hope you look at this and take a look at whether some of those other recommendations are equally as valid industry-wide, the findings on combustible dust.

I'd also just in order also say that you have a finding though from West Virginia OSHA office but no recommendations. I wonder whether there should be recommendations? I don't know.

The Fire Marshal's Office. There was no finding. State budgets are in a crisis. It's very difficult. But should there be a finding or a recommendation? I don't know.

And lastly, I don't know whether
any state plans beyond federal OSHA, whether
sometimes state OSHA plans are at the
forefront of taking action before federal
OSHA.

I don't know if any state plans a
combustible standard or recommendations, but
at a minimum these reports should cover what
the current status is in general for the state
plans. Thank you.

DR. HOROWITZ: Thank you. Any
other commenters on AL Solutions?

CHAIRPERSON MOURE-ERASO: Hearing
none I think we'll move to the next point in
the agenda, that is the vote on the report.

I make a motion as a Board Member
to approve the report on AL Solutions as
presented.

The formal way of doing the motion
is I move that the Chemical Safety Board
approve the Investigation Report No. 201131WB
entitled "Metal Dust Explosion and Fire at AL
Solutions, Inc., in New Cumberland, West
Virginia that Occurred on December 9, 2010," including all findings, recommendations and associated figures, progress contained or referenced in the July 16, 2014 case as studied.

Do I hear a second for this motion?

MR. GRIFFON:  I second the motion.

CHAIRPERSON MOURE-ERASO:  Okay, so do we have a discussion on the motion?  No discussion.  So I call on Mr. Loeb, our general counsel, to proceed with the vote.

MR. LOEB:  This will be a quick vote, I imagine.  Mr. Griffon?

MR. GRIFFON:  Yes.

MR. LOEB:  Mr. Chairman?

CHAIRPERSON MOURE-ERASO:  Yes.

MR. LOEB:  The motion is approved.

CHAIRPERSON MOURE-ERASO:  Thank you very much.  I would like to thank the people that talked here today around AL Solutions, especially our representatives of
our elected officials and also the persons that presented comments on the details of the report.

Now, I would like to call for a 10-minute break and we'll reconvene to discuss the Freedom Enterprise progress report. So we'll take a 10-minute break. Thank you.

(Whereupon, the above-entitled matter went off the record at 1:02 p.m. and resumed at 1:15 p.m.)

CHAIRPERSON MOURE-ERASO: We are going to proceed. I am going to ask Mr. Johnnie Banks to take over the podium and provide us with an update on the CSB Freedom Enterprises investigations.

So, Mr. Banks.

MR. BANKS: Thank you, Mr. Chairman.

I will now provide an update on the Freedom Industries investigation just to give folks a sense of where we are with that investigation.
On January 9, 2014, 10,000 gallons of 4-methylcyclohexanemethanol, or MCHM, mixed with 5.6 percent propylene glycol phenol ethers, or POPULATION HEALTH, was released into the Elk River due to the failure of a tank, the secondary containment.

The mixture leaked from a 48,000 capacity aboveground storage tank, or AST, at the Etowah River terminal facility.

The MCHM and PPH mixture entered the soil and eventually migrated to the Elk River by moving through the soil, gravel and water systems located under the facility until finally reaching water.

The Freedom facility was located about 1.5 miles upstream from intake of West Virginia American Water Company.

The company provides water to over 580,000 citizens in West Virginia including residents and industrial clients.

When the leak occurred at Freedom up to 300,000 residents and industrial users
in 9 counties were impacted.

Now, the West Virginia Department
of Environmental Protection received odor
complaints early on the morning of January 9,
2014, and arrived onsite at 11:15 that day and
identified the release at the base of T-396.

It wasn't until 5:45 p.m., or over
five hours later that the West Virginia
American Water Company issued a do not use
order. And at 9:30 that night the Governor
issued a state of emergency order to West
Virginia.

The following morning, January 10,
President Obama declared a federal disaster
area for the nine counties impacted by the
leak.

In the days following the release
there were several announcements communicated
to the public regarding water usage.

On January 13, the West Virginia
American Water company advised the flushing of
water systems.
On January 15, the CDC issued a water advisory for pregnant women to drink bottled water.

On January 21, Freedom revealed that PPH was in the mixture released into the water supply in addition to the MCHM.

On February 5, a spokesman from the CDC, or Centers for Disease Control, announced that the water was appropriate for use. However, odor complaints continued and many area schools reported closures over the following days and weeks.

On February 21, the CDC issued a statement that described the water as safe. However, the CSB found the message to be obscure and it was not widely communicated.

In late February, the Governor of West Virginia lifted the state of emergency order. And in March the CDC announced that no adverse health effects in MCHM in concentrations below 10 parts per billion.

So the Governor's office has
lifted the water advisories and the CDC has declared the water safe for drinking. Residents continue to distrust the information that the water is safe.

A lingering odor remained in the water after CDC declared the water was appropriate for use.

The long-term health impacts of MCHM and PPH at low concentration remains unknown.

Now, I'll turn the proceedings over to Ms. Tyler for this part.

MS. TYLER: Thank you. From January 9 to January 23, 2014, the West Virginia Bureau of Public Health reviewed 369 records of patients who had symptoms and reported exposure to the water.

Thirteen of the three hundred sixty-nine patients were hospitalized. The rest were treated and released with intravenous fluids and medications to reduce the effects of exposure such as nausea and
skin irritations.

People were most commonly exposed to the chemicals in the water from bathing and showering. Other routes of exposure were ingestion and inhalation, and some patients reported exposure to more than one possible type for their symptoms.

In preliminary health impact data provided by the Kanawha County Health Department common complaints included nausea 38 percent, skin rash 28.5 percent and vomiting 28 percent.

The Kanawha County Health Department reported that these symptoms are consistent with known health effects of MCHM. And those are based on very limited animal studies.

One of the preliminary findings related to the public health impact is that there is limited toxicological information on MCHM, PPH and their chemical constituents.

The CSB reviewed toxicological
data from MCHM manufacturer and found that
there is little data available on exposures at
low concentrations. Almost all the studies
for MCHM include short-term exposures to high
doses of MCHM.

Also, the material safety data
sheets, or MSDSs, did not provide information
on the potential health hazards to assist in
a timely notification of water usage
restrictions.

And now Mr. Banks will return to
the podium to discuss the tank inspections at
Freedom Industries.

MR. BANKS: Thank you. The CSB
commissioned an inspection of the tank from
which the tank leak occurred and similar tanks
at the Freedom Industries facility.

Testing included a scanning of the
tank, the interior, the surrounding topography
of the facility and the riverbank, and
portions of the tank were cut out and set for
metallurgical examinations which are yet to be
conducted.

We've got a short video that shows some of the work that went on I'd like to share with you.

(Whereupon, the video was played)

MR. BANKS: This is some activity just prior to openings being cut into the tank for access for removal of portions of the metal.

This is the tank where the leak was most prominent.

This is the technique that was used to cut the samples. It's a high-pressure water-cutting technique which minimized the risk to the folks that were doing the work. In the presence of possible flammable atmospheres they use a high-pressure water system and were able to conduct all the cutting that we wanted on the tanks.

The tanks themselves, this is the area of the main section of the tank where the holes were noted.
Here we have the two holes. One is about three quarters of an inch in diameter, the other a little bit less than a half an inch. And as you'll see in later slides there is a series of other characteristics that indicate potential failure sites as well.

This is the technique that was used to cut the samples that are called coupons. They are round sections of the tank that we gathered. There were other representatives from plaintiffs and the company there also to observe the removal of these pieces of equipment.

And post cutting we did a pretty thorough inspection of the site to make sure that all the samples that we needed for steps moving forward were gathered.

Now, preliminarily one of the early findings in this case, the inspections were conducted in accordance with the best practices today which are the test methods as
found in API 653.

The API 653 inspection clearly indicated that the holes in T-396 were a mechanism for the large spill that occurred on January 9, 2014. And these are those two holes that I just pointed out, the two-quarter inch hole and the little bit more than half an inch.

But then you'll also see that there is some pitting observed here which indicates areas that would have potentially failed as well.

In this slide there, there was a deformation in the tank wall. And we've cut this section of the tank out and we'll subject this to analysis as well to determine if there might have been any leaking that occurred there prior to January 9.

The final determination on the failure mechanism will be made through forensic examination of the metals that we have extracted from the tanks at a lab that
We've selected for the tests to be conducted. We'll examine the corrosion modeling by an AST, aboveground storage tank expert. And preliminarily there is growing evidence that the holes did not originate from outside the tank but from within due to the characteristics that we noted earlier where -- as you will note here this hole is bored through. This hole is a little bit smaller and these are ones that appear to be forming.

So as we proceed with this investigation we're going to subject this portion of the tank to a really close analysis to determine if a failure did occur of the corrosion from the inside.

To date we have not found any records of inspections that would indicate a rigorous, programmatic, regular inspection frequency.

And the lack of engineering inspections that would prescribe the frequency and the rigor is something that is noteworthy
for our findings so far.

    Tank 397, another tank that also contained MCHM and PPH mixture had a hole in it. And this to us indicates that there was the possibility of a leak from that tank as well. That's an area of interest for us moving forward that we will pursue to determine if this hole was leaking material, and if so, the amounts that might have been leaked from the tank prior to or after or up to January 9 of this year.

    Due to the extensive corrosion the CSB suspects that the leaks existed prior to January 9.

    One of the key indicators from these findings is that the multiple pitting and metallurgical damage to 396 and other tanks in the MCHM service.

    This is the hole that was observed in T-397 and an area that we will continue to pursue. This is the deformation that I noted earlier on the tank wall.
In this slide we've got the depiction of the API 653 diagram of the corrosion that was observed on T-396 which is located here.

But if you'll note, on T-395 there were areas of concern as well and 397 where the hole which was located right in this area.

And it's important to note that these API 653 tests were conducted by multiple API 653-proficient experts.

The CSB commissioned our own expert but there were several other API 653 inspectors onsite that day. And they used their own independent devices, but they have a marking system to denote where the corrosion was.

And because the -- for good or bad, the conditions were kind of wet, so as one API 653 inspector would conclude his work, his work would be obscured because the surface of the tank was wet and the chalk markings would be obliterated.
But over the course of the two days that these tests were conducted it looked like a child's hopscotch area in terms of the number of areas that the corrosion were noted by the independent inspections that were ongoing.

So, these are key indicators to us that there was a serious corrosion problem growing in all the tanks and just manifested itself in 396 the worst. But 397 is showing signs of that type of failure, the multiple pitting, the pattern that we noted in 396.

And then the fact that there were possibly holes in the roof that led to water entering into the tank and pooling in areas. There was an odd shape that's associated with the holes in 396. We think that the water may have laid there and kind of facilitated the corrosion that we noted.

Moving forward, as we continue with the investigation we'll subject the metal the we've extracted from these tanks to a
metallurgical examination.

We will hope to bring about a computer modeling of the release. And that would take into consideration the topography of the site itself, the lay of the land so to speak, and help to determine why the material would flow the way that it did, how it would find access to the Elk River.

We'll examine any information that speaks to the public health impact that's of import to this agency, but one that we would consign to agencies and organizations that are proficient to speak to those issues. But we have a keen interest in following those developments.

We would also look at the regulation of aboveground storage tanks to see the applicability of existing rules and if there is a need to strengthen or implement new rules.

We would look at the tank siting of a chemical plant with this close to a water
intake system. Obviously that's something of keen interest to us.

We'll also look at the evolution of the water treatment intake systems, the nature of that process and any changes that might be necessary moving forward.

And then also the emergency planning and notification process that took place when this incident occurred.

These are some of the key areas that we will be pursuing as we move forward.

That concludes the update on the Freedom Industries investigation but we're happy to entertain any questions that the Board might have.

CHAIRPERSON MOURE-ERASO: Thank you, Mr. Banks.

First of all, I -- on the things that you observed and presented I think it's important to note that the underlying root cause of many of our investigations, especially the ones that you have been
involved yourself, including these last two in
West Virginia is the lack of thorough
inspections and hazard reviews. And the need
for instructive regulations in areas where we
find that volunteering, that self-policing is
not preventing the accidents.

The Board looks forward to the
team's final report that will examine
regulatory oversight of aboveground storage
tanks in West Virginia and the U.S.

Thank you for your presentation,
Mr. Banks. And now we will see if there is
some questions from the Board to you.

Mr. Griffon, do you have any
questions to the team?

MR. GRIFFON: Thank you, Mr.
Chairman. Just a couple of questions.

One is on the metallurgical
testing. And I was just wondering if you
could expand a little more on what we expect
to find out with the metallurgical testing.

I think it's primarily to confirm
or test our hypothesis that the corrosion came from within the tank, not the other way around. But are there other learnings that we might gain from the testing?

MR. BANKS: I think in addition to the obvious we want to determine where the failure most likely originated from.

But the fact that you have a tank of vintage that extends beyond earlier than World War II we're looking at the metals that were used there and considering what type of metallurgy might be appropriate for this type of service now.

We're hoping to consider the changing of the material from a petroleum-based process to one that's seemingly not of that type but still had a detrimental effect on the waterways and the intakes to the West Virginia Water Treatment Association.

MR. GRIFFON: Thank you. And these other questions are more on some of the information on the toxicity issues and things
like that.

I'm trying to square -- there's a couple of slides we have in here. I'm just trying to square this in my mind.

On the water advisory time line we say that there's no adverse -- or I'll restate that. I think CDC determined that there were no adverse health effects below 10 parts per billion.

And then later in our finding, the first finding slide, we say there's limited information on long-term health impact at low concentrations.

I'm just trying to square those two statements in my mind. Can you help me with that?

MS. TYLER: The statement that we made about the fact that there is little information available is based on our review of the manufacturer's toxicology reports.

And from that information we learned that they had all animal studies for
acute or short-term exposures to MCHM at high concentrations.

So with that we concluded so far in our investigation that there is very limited information available that we have reviewed thus far for low concentrations, the type of exposures that would have been in the water over several days or several weeks.

MR. GRIFFON: Okay. And I think this sort of -- my next question builds on the last one.

The Bureau of Public Health and CDC apparently are continuing work on this matter. Is there any update? I mean I know we're not doing the study of those issues, but we're following it as Johnnie indicated.

Can you give us an update on what actions the West Virginia Bureau of Public Health, or CDC, or I think there's another group, West Virginia Testing Assessment Project. Can you give us a brief update on where they're going with their investigations?
MR. BANKS:  Sure.  We've been
working closely with the West Virginia
Department of Public Health from previous
incidents.  But this may vary.

But it's, as I said, a keen
interest for us.  There was the release of
information I think last week of the effects
of MCHM not being or being more severe than
was originally reported.

So those areas that we're looking
to try to wrap our arms around and see and
engage the significance of those findings.  We
rely on the expertise that those bodies have
within to provide the type of information that
the public is requesting and in need of to
make decisions on whether -- how they feel
about the state of affairs regarding the
water.

The Bureau of Public Health,
Department of Public Health, the TAP project,
those are all ongoing processes.  So we'll
continue to partner with them to gather
information and through those collective activities I think we'll provide some information that the public can find useful.

MR. GRIFFON: Thank you. And just the last question, and I think this may have been said in the presentation but I think it might bear repeating.

The actions that you list at the end of your presentation. One was the consideration of public health impact.

And perhaps you mentioned this already, but can you maybe restate for me as well as the audience what the CSB's role in that.

In other words, I don't think we're -- we're certainly not in a position to be doing a health study. But I think -- what are we going to do in that regard regarding health impacts, public health impacts?

MR. BANKS: We are not, you know, public health experts. But I think we will examine the reports that come from these
bodies that have the expertise. Those facts will be -- I think we are in a position to disseminate that information certainly.

But we rely on them to have resources and the wherewithal to give the public the information that they need to make the decisions on usage moving forward.

MR. GRIFFON: And I'm hopeful also that in doing, in reviewing this information that will give us some insights as to possible gaps in how public health and environmental impact are regulated. So I think that's probably part of the equation.

We'll consider this data that's in front of us but then we'll also look and see how the overall system should be changed.

Thank you very much.

MR. BANKS: Thank you.

CHAIRPERSON MOURE-ERASO: Thank you, Mr. Griffon.

I have a question for the panel too. It seems that the issue of storage of
chemicals near waterways is not a West Virginia problem but is a nationwide problem.

And one of the issues that you are looking at and that you have talked about in this preliminary investigation is how an inspection of the integrity of these tanks will be necessary.

And my question is are there specific regulations that give instructions to operators on how to inspect the tank and how to find out if the corrosion might or might not be a problem? Or are these voluntary regulations? Or what do we know so far about in this issue?

MR. BANKS: Well, using API 653 guidance there's a prescribed methodology for examining tanks that are in service that if followed and adhered to these type of failures can be detected early, the corrections made and there's no impact on the environment or the community when something like this happens.
I think one of the observations that I came away from in observing the testing with the various API 653 inspectors was that they were finding areas of concern. And had one of the tanks been emptied and an API 653 inspection conducted in all likelihood the potential failures might have been found and we're not having this conversation.

So, it speaks to being proactive in considering the potential impact of a failure of a tank such as these in proximity to a water intake for such a large population. It's a tributary to the Kanawha River, the intake to the West Virginia American Water Company. There's a number of different issues there that loom as large and significant for our agency in terms of impact of an event like this on the community.

CHAIRPERSON MOURE-ERASO: Thank you, Mr. Banks.

And another question that I have is I understand that OSHA responded to this
situation and they issued some citations.

Could you refresh my memory about how did OSHA participate in this?

MS. TYLER: Yes. OSHA just recently issued three citations to Freedom Industries. There were two Serious and one Other Than Serious citations totaling $11,000 as of now.

The citations include, one, they had a violation for not having railings on an elevated platform at the facility.

Another one was the walls of the dyked area or the secondary containment were not liquid-tight.

And the third one was there was improper labeling of the storage tank. In particular, it was containing MCHM but it was labeled as containing something else. Those were the citations.

CHAIRPERSON MOURE-ERASO: Thank you very much.

At this time I would like to open
the floor for public comment. I would like to
ask Dr. Horowitz to lead the discussion.

DR. HOROWITZ: Thank you, Mr. Chairman.

The first commenter is it looks like Janet J.T. Thompson. And Ms. Thompson, if you could please spell your name for the transcriber and state your affiliation if you would be so kind.

MS. THOMPSON: J-A-N-E-T T-H-O-M-P-S-O-N. I'm just representing community citizens of counties involved in the state. Initially I thought I would be coming here to -- not having ever came to a findings and recommendation before. I kind of thought it would be like the county where we make our comments. So I thought we'd be discussing the criminal aspect of Freedom hiding this spill because it's obvious from the information that it's been going on longer which is verified with the tanks.

And I thought, well, there will be
conversation on the bankruptcy fraud, there's conspiracy on that because the information is out about that.

But now that I understand it's about your investigation my concern is this. Freedom -- the Etowah terminal facility, the DEP was supposedly monitoring it since about 2005 regarding remediation with the Quaker Pennzoil, the diesel and everything. So I'm not quite sure how this went on for so long.

And also, I don't know if you have anything to do with this but it was 400,000 gallons of seven chemicals located there. So I basically get my information from the papers.

So I'm trying to figure out are the chemicals removed? And if so, why is there still a smell not of the licorice by Washington Manor next to the water plant and in front of Freedom even now? Not the licorice smell, but a strong chemical smell.

I don't know if you have anything
to do with that but that's our concerns.

And I'm mostly concerned about the children because of the families who didn't know about the spill and don't understand the chemical issues regarding it. You say there's no tests and -- our tests as regarding to what the effect is.

I'm just concerned that this is still an ongoing thing. And why would the water company change filters before the plant was tore down?

So I don't know if you all have anything to do with that but those are my concerns and comments.

MR. BANKS: Regarding the nature of our investigation as we make known in any venue that we give oversight of what we do, we're an independent agency. And by that we are independent of other entities that are investigating this case.

There are other agencies and organizations that have an enforcement or a
penalty component to their findings. Ours is by design independent and non-blaming, non-punishing so that we can get to the facts.

And we have conducted our investigation in that vein from the very outset.

I think the note that you make of the odors, that is to be expected. That's not making excuses for anything.

But they have started the process of removing these tanks from the site. They have cut holes in the tank and there is material that -- residue.

And so I don't know that that's what you're smelling but it's very likely what you're smelling.

There's a very high likelihood that when the MCHM tanks come up that there will be a reintroduction of the smell of licorice into the atmosphere. It would be prudent for folks to -- to give folks a heads up that that's in the offing, that the tanks
are coming up and they may smell MCHM.

   All of the concerns that you
raised, the concerns of the children, we're
concerned for everybody. We have a concern
for providing information that is as accurate
as we can possibly make it so that folks can
make informed decisions on what they need to
do.

   And that's our commitment and will
continue to be.

DR. HOROWITZ: Next is Maya Nye,
People Concerned About Chemical Safety.

MS. NYE: Hello, Mr. Chairman.

Thank you for once again coming to town, Board
Members and trustee staff, investigators.
It's always reassuring to see you here because
we know that there will be a thorough
investigation of what happens at yet another
chemical disaster.

   I want to reiterate Brother John's
point from the Chemical Workers Union from the
previous presentation and just say that
hopefully the information will be available to
the public prior to the meeting to be able to
give thoughtful comment that you can then
utilize when making your decisions whether or
not to pass the report.

I also, I heard you mention that
lack of inspections and review are a major
issue. That's something that we have
reiterated time and time again. So it's good
to hear that that is something on your radar.

And that volunteer programs, it
seems it's very apparent that those do not
work.

And speaking to Mr. Griffon, to
your point about what is the role of the
Chemical Safety Board in addressing the public
health concern.

Well, the issue is that we need to
have accurate scientific information in order
to determine what the hazards are.

And in this case it's becoming
clearer and clearer that we do not have that
information. As highlighted by the reports recently from Dr. Welton and the information that he previously put out.

So it's very concerning to hear that potentially this chemical could be 2 to 6 times more hazardous than reported, than voluntarily or self-reported from industry. So that's very important.

I wonder if you will take into consideration any sort of additional financial penalties, in making recommendations on increasing the financial penalties that are given to industry. Because time and time again slaps on the wrist show that it doesn't prevent future chemical disasters.

And going back to the point on the lack of information about this chemical, the information that was utilized to make public health decisions was based on the information that was provided by Eastman Chemical. That information is also what is reported on the material safety data sheets
which workers use to determine exposure limits, all kinds of issues. So it's very, very important that we have accurate data and it just proves that we need checks and balances.

I obviously have a whole lot to say but maybe I'll present some written comments. Thank you for being here once again.

DR. HOROWITZ: Thank you. Next is Vernon Haltom, Coal River Mountain Watch. And could you spell your name for the transcriber, please?


On January 9 I watched the news that evening and was appalled when the news report stated that this chemical was non-toxic.

And I thought of all the people,
our friends and members who were in the affected area who might take that seriously and think that, well, if it's non-toxic it should be okay.

And that information was put out by the Department of Environmental Protection. And I think that was somewhat irresponsible in making that statement so early in the crisis.

As we found this chemical is far from non-toxic and we're still just learning about it.

I think it's also important to note that this was not merely the result of the corrosion of one tank or two tanks, but a culture of resistance to regulation and enforcement of regulations statewide.

The previous Governor Joe Manchin once told a coal industry gathering that he didn't want his inspectors going out with a ball bat, cease and desist order and fines.

That guidance has not been lifted to my knowledge and that culture is still what...
has permeated the regulatory agencies in West Virginia so that they do not take their job seriously.

They do not conduct inspections in a timely manner or in an effective manner, and they do not issue appropriate fines and cease and desist orders when those things are appropriate. There is no deterrence to this sort of bad behavior.

And we've seen the slaps on the wrist that Freedom Industries has received and that's par for the course in West Virginia.

The coal industry has many, many violations. This chemical and others leak into streams and is pumped into well water supplies throughout the coal fields where mountaintop removal occurs and in many places. And it doesn't make the news because it is so routine.

So I do hope that the recommendations include, one, that the state regulators insist and instill a culture of
making people's health and safety the top priority, not an afterthought, not after the disaster has occurred, and place that health and safety ahead of industry profits and convenience.

Now, we need to institute the precautionary principle in West Virginia. Not wait until people are sick and dead and their heirs possibly sue a polluting industry and settle for pennies on the dollar years down the road.

And I appreciate your time and thank you for coming and making your results known. Thank you.

DR. HOROWITZ: Thank you. Next is John Morawetz from the National Chemical Workers Union.

MR. MORAWETZ: And for the record it's M-O-R-A-W-E-T-Z.

One, thanks for the staff and the Board for some information. In terms of process it's very interesting.
It's the first public meeting I've been to that's an update, not a final report. It gives us some insight as to where the staff are going with the report. It's helpful information and helpful also for you to hear from the public.

So as an idea of where the process may go I think you may want to consider -- I know it's expensive for everybody to be here, but a few investigators coming to a public meeting, releasing what's going on could be helpful in the future.

Two is I work in Cincinnati, Ohio. We are painfully aware of problems that happen upstream of the Ohio River, Kanawha River.

In this instance we -- the gates for the water intake are upstream of Cincinnati on the Ohio River and about -- we're used to this. A week after the spill they closed the gates. They get the water from inland in Ohio and that's what feeds our system. And then they're closed again. I
also personally drank a lot of bottled water.

Our particular involvement is that the Chemical Workers works very closely with American Federation of Teachers. And AFT approached us with their West Virginia affiliate for information because on January 10th or 11th, maybe 12th, somewhere around there, the custodians who are represented by the West Virginia Teachers Association were asked to purge the lines in the schools.

So we came up with a fact sheet which I've given to Johnnie Banks and to the Board Members, Chairman Moure-Eraso and Member Griffon.

And also the Bureau of Public Health in West Virginia basically copied it within a day and put the same thing out. And we're very pleased to be able to help get information out.

I'm looking at it now sitting here and realizing at that point in time the recommendation was 1 part per million. The
recommendation now is 10 parts per billion. The numbers are very strange. Ten parts per billion is -- with the recommendation originally it was 1,000 parts per billion. So basically it was dropped by 2 orders of magnitude divided by 100.

And I remember controversy among toxicologists. And what underlies this all? We don't have enough information. It was pure MCHM. You hear all these discussions. We don't know and regretfully all too often there's a rush to "it's safe" without a sort of reasoned discussion, what evidence do we have, and what can we do to have a safe, precautionary principle for people, whether it's workers or the community that could be exposed.

Because every community situation, you scratch the surface, there's a worker situation. Every worker situation, sooner or later it's going to be an environmental exposure. So we should look at all of those.
I would say also in terms of the root cause analysis I was very pleased in I think Johnnie's presentation or Lucy's -- I think it was Johnnie Banks' -- that there was a question of siting of the facilities.

From the beginning I was shocked to hear that a mile upstream of a water intake for any community let alone a city can have this possibility. It seems to me we need to grandfather in some zoning situation, a question that the CSB has dealt with before, NDK Crystal. There was an explosion that was -- this facility was close, within a couple hundred feet of Interstate 90. A trucker was killed.

There should be some question of zoning, not just West Virginia, but where do we want to have facilities that have thousands of gallons of toxic chemicals that are this close to our water intake.

I also hope that in your report you'll talk about the odor threshold.
Clearly, is it adequate. What are the warning properties there? And thank you very much for your time.

DR. HOROWITZ: Thank you, Mr. Morawetz. And next is David Christianson. Go ahead, sir.

MR. CHRISTENSEN: My name's Dave Christensen. I'm a retired chemical engineer, registered.

DR. HOROWITZ: Sir, would you mind spelling it for the transcriber?


I'm a retired chemical engineer, registered professional engineer, 37 years in the chemical business. Half of that in process risk assessment. That's my background.

And my point is that, to use a West Virginia expression, let's not get bore-sighted. Consider what we're looking at here.

MCHM and PPH are not unique
chemicals in the lack of knowledge of them. In fact, I think the majority of them out there in the chemical business do not have complete toxicology data.

Animal studies are not -- and most of the time that's the limit. So it's not unusual to be confronted with this. That's my point on bore-sighted. Let's just not focus on these two chemicals.

The other point is that we heard -- we talk about concentrations, 10 parts per billion, 1 part people million. How many chemicals do we have in our water supply at the 10 part per billion level? It would be a list as long as this room.

How many of those do we have toxicology information on? How many of them are in the same state as the two chemicals that we're talking about?

So that's really my message. It's a broader issue than just these two chemicals.

DR. HOROWITZ: Thank you. Thank
you for the comment. Next is John Robinson, KCHD.

MR. ROBINSON: Actually I thought that was an attendance sheet so I signed in on the wrong page.

(Laughter)

MR. ROBINSON: For the record.

But thank you.

DR. HOROWITZ: Okay. Did you have a comment?

MR. ROBINSON: Actually I'm here to ask if there will ever be any studies done on the species that live in the river and how that might affect the environment as well.

DR. HOROWITZ: Do you want to speak to that? Environmental impacts?

MR. BANKS: I think early on there was an assessment of fish. And there were no fish-kill recorded. And that was early, early on in the investigation. I've not heard of anything subsequent to that, but again, those are areas of expertise that are beyond our
scope of our investigation. But those are things that can help to develop really a solid base of information from which folks can learn and grow from.

DR. HOROWITZ: There's one that I'm just having trouble with the handwriting so if you don't notice your name called please come up after the other three. And it's just a little hard to decipher here.

And then next I think is Vivian Stockman, OVEC.


Thank you for your investigation here. We definitely need the scrutiny.

As the Chairman of the Board noted your investigation so far shows that the self-policing does not work. And it shows that the state government, the DEP is failing to do its job of inspections and enforcement of regulations.
I'm struck especially by the statement in the press release from the Chairman which says the accident was a disaster of the highest magnitude, was preventible and must be averted in any other community to prevent disasters in other communities.

I think in one case or several cases we're a little too late. I'm thinking of the communities of Rawl, Lick Creek, Merrimac and Sprigg in Mingo County and Prenter in Boone County where waste from coal plants has poisoned the well water. So that's what this MCHM chemical was.

And we're finding there's probably dozens if not close to a hundred of different type of chemicals used in the coal prep plants.

So I'm just wondering if there is any possibility of a recommendation of another study looking into these plants and what chemicals are used at the plants.
And no more proprietary formula secrets. We need to know where the chemicals are stored, how those tanks are investigated, how they're inspected rather at the prep plants.

We need monitoring of the effluent coming out of these plants. And I'm just fearful that the MCHM type chemicals have already leached into the waterways and communities in the areas that I've mentioned and elsewhere where there's coal slurry impoundments, underground coal slurry injections and these prep plants.

I'm afraid this same type of disaster is unfolding in these areas. So I appreciate it if there's any possibility to extend some sort of investigation to all the chemicals used at those plants.

DR. HOROWITZ: Thank you. Next is Chris Hale, Friends of Water.


And just want to thank you for being here. We
need you.

To echo a couple of earlier comments with regard to the fees that they're paying their attorneys per month are about roughly $2,500 more than the OSHA fine to put that number in perspective. And we find that troubling.

We do want to thank you here and this comment is more directed toward our regional and state leaders to finally implement the recommendations.

The Chemical Safety Board was here in 2008, 2011 and in 2014. And the cycle of carelessness and industrial negligence needs to stop now.

And I will too say that I have family members down river in Louisville, Kentucky. So this didn't only affect Cincinnati. They also had to shut off the mains in Louisville. And this is a great concern. Thank you.

DR. HOROWITZ: Thank you, Mr.
Hale. And the next is Kenneth Hale, NAACP.

MR. K. HALE: No relation to Chris that I know of.

Historically, Charleston has been known as the chemical capital of the world. And for us in the NAACP it's a concern that environmental justice is not happening in the way that protects its citizens.

You've given some figures from your documents and your findings of 10,000 gallons being spilled, and the tanks have the capacity of 48,000. And folks can speculate because of the lack of inspections and the lack of reports from Freedom Industries that the amount of spill could have been greater.

That's not my concern. That's not what I'm a resident expert on.

My concern as far as the NAACP and the citizens of West Virginia, we thank the City of Charleston for using the fire departments as distribution points for those to pick up water.
But it seemed to have a lack of concern for those who could least afford to purchase water. And the areas that were mentioned by J.T., Washington Manor, Orchard Manor, Littlepage, South Park, all are located near community centers which could have been used and made available by the city to distribute water to the poor and indigent folks of the City of Charleston.

And when you consider the fact that it was a week later or even possibly further that folks were able to get to the water or even -- and even have notice. Because not everybody has a TV or a radio in their home. The indigent folks I'm talking about. So they may not have even known that the water was not even potable.

And the concern is we need a plan. And I say "we" West Virginia, City of Charleston needs a plan that takes these things into consideration of how water will be dispersed.
And not only the water and what happened with the chemical plant. We have a lot of chemical tanks going up and down our tracks which could easily spill into our water system.

So when you're looking at above storage tanks I think you also need to look at another industry and that would be the railroad industry, and how they store their tanks, and what type of things. Because this could happen again and especially in this community.

And again, we've got a lot of chemical plants, Monsanto, DuPont, all around here. And again, when you're looking at Freedom Industries I think you need to take a closer look at all the industries around the valley. Thank you.

DR. HOROWITZ: Thank you. And is there anyone else in the audience who'd like to comment who hasn't signed up? Yes, sir.

MR. PRICE: Yes, I'm Phil Price
with Neoteric Associates.

My question was relating to the very first slide that mentions two chemical components in the spill. And yet public domain data from Tennessee Eastman and Dow Chemical easily indicates 10 compounds in the spill.

My question is has this group actually done LCMS and GCMS analyses to produce accurate qualitative and quantitative analyses of a retained sample of what was actually spilled. Or are we merely taking Freedom's word for it as to what was in the tank?

DR. HOROWITZ: Fair question.

MR. BANKS: We obtained samples of the MCHM-PPH mixture early on. That information has not been processed in the lab as yet. We are in the process of winding up our information- and data-gathering portion of the investigation.

Now we have to make sense of it
all. I mean, we go out there and we have a relatively small team of folks that have been assigned to this investigation since January.

And the bulk of that has been conducting interviews, photo documenting, getting the metal and the samples.

Okay, so now comes the really heart and soul of what we do is making sense of it all. So that's the next step in the process.

So we do have samples that we have gathered with our partners at OSHA and the plan is to get the results from that.

DR. HOROWITZ: Any others? Yes, ma'am. Or -- either one.

MS. LEWIS: My name is Conni Gratop Lewis. For the transcriber, C-O-N-N-I Gratop G-R-A-T-O-P Lewis L-E-W-I-S.

Like J.T. and Kenneth I'm here on behalf of the citizens of Charleston. And this, what I have to offer is some guidance for the staff as they move forward.
It is not sufficient in studying the health impacts to rely on the Bureau of Public Health or the West Virginia State Health Department. You must talk to the Kanawha Charleston Health Department.

There were approximately, the best studies indicate 100,000 of the 300,000 people most impacted who reported -- who had physical symptoms.

They may have gone to their individual private doctor. They may have decided they weren't sick enough to report to a hospital emergency room or to a clinic like MedExpress.

When the state health department and the CDC commented on the health impacts they were extremely dismissive. In fact, they were insulting to the thousands of citizens who were impacted although perhaps not seriously.

DR. HOROWITZ: Thank you. And I believe we are in contact with that health
department.

MR. BANKS: I was remiss in not mentioning the fact that we have been in close contact with Kanawha County Health Department as well.

So it's the whole suite of folks that are looking at this incident. We have had some dialogue with most if not all of them. And we value their input. And so it's multiple sources to get information on this incident.

DR. HOROWITZ: Thank you for the comment and clarification. And yes, ma'am, I think you had a comment too.

MS. SODARO: My name is Linda Sodaro, L-I-N-D-A S-O-D-A-R-O. I'm a community member who went through this like everybody else.

And I noticed that you talked about water coming into the tank and causing corrosion at the bottom of the tank.

Did you consider water coming
under the tank as Freedom has tried to point
the fingers at the airport?

MR. BANKS: Yes. We've not ruled
anything out. What we do is we gather as much
physical evidence as we possibly can and draw
conclusions based on that evidence.

The evidence based on our
observations and input from our tank expert is
that the corrosion occurred from within the
tank based on the slide that we showed there
of the development of two holes and then the
gradual lessening of pits that were issuing
forth from those first two holes. Which does
indicate that there may have been some
defection in the tank floor that allowed
water to pool there, which would tend to
increase the corrosion.

But those are things that we want
to make an absolute determination of through
our forensic examination of this metal at the
lab.

So those are things that we hope
to really make a really firm declaration on.

MS. SODARO: I have another question.

DR. HOROWITZ: Go ahead.

MS. SODARO: Are you going to be able to determine exactly how long the spill was going on? Because I know for a fact I tasted it in the water in the middle of December. And I thought it was my filter pitcher that needed the filter changed. So I know it was in there before, well before January 9.

MR. BANKS: We're in the process of coming back to the site to grab soil samples which will help us to determine the permeability of the soil which kind of indicates the retention characteristics. How readily would material that is leached into that soil migrate out towards the Elk River.

So those are things that will help us to determine leak rates and possibly step back and take a look at how long the leak
might have occurred.

I'm -- not absolute surety at this stage of the game, but if we can determine the amount of retention characteristic in the soil we may be able to make those things available.

MS. SODARO: I thank you for being here because living in fear of your water is no way to live. Thank you.

DR. HOROWITZ: Thank you. Any others?

MS. THOMPSON: Could I just ask Mr. Banks one more question?

DR. HOROWITZ: Sure. Can you come up to the microphone?

MS. THOMPSON: Mr. Banks, I appreciate you all too, but as I stated earlier, Freedom site indicates they held seven different chemicals, 400,000 gallons. So my question is will you check all the tanks for holes? And be sure that none of the other seven, because you had three you checked, aren't leaking.
And if so, will you do that and then we have even more on our mind that there's other chemicals that actually came out of those? Because all the tanks were leaking. Will you do that? I mean, I don't know. I hope you do.

MR. BANKS: We have not done that and there are no plans to do that.

What we do is we're looking for a root cause for this event which was the release of a significant amount of MCHM and PPH into the Elk River that impacted 300,000 people.

We -- if there were indications that there were other chemicals in the water that were detected obviously we would look at those other tanks.

But we have limited resources and so what we've done is to wrap our arms around what we see is clearly the source of the problem.

And we don't rule out the
possibility of other things but we're not
seeing any other constituents that were
involved.

Now, if we were to see that there
are some tanks there that are marked glycerin,
for instance. If we were to see that there
was a pronounced quantity or concentration of
glycerin in the water then we would look at
those tanks as well.

DR. HOROWITZ: Any others? Yes,
sir. Come back.

MR. K. HALE: I know this is
turning into a discussion now because one of
our concerns was not just the chemical spill
but what type of impact to the intake system
to West Virginia water would these chemicals
have on its filtering system, you know, things
of that nature.

So what I'm concerned is our
drinking water, our potable water. So I mean,
it was two or three months later before this
oh, we need to change our filters at West
Virginia American Water.

      Maybe the spill had been stopped
but the water intake process and what was
being distributed to the community could still
be unsafe if these chemicals, MCHM and PPH
could affect or get into the water system
itself.

      So there's still some questions
about West Virginia American Water, whether
they're taking all due diligence in relieving
us. Because again, they won't -- in
Charleston still feel unsafe to drink the
water.

      And then creating a second intake
system from another water source. You know,
those questions have been asked.

      So whatever information you all
come out I think needs to go to the Public
Service Commission in your report to indicate
whether West Virginia American Water has done
its due diligence.

      DR. HOROWITZ: Any others? I
think that's it, Mr. Chair.

CHAIRPERSON MOURE-ERASO: Thank you, Dr. Horowitz.

I would like to thank all of you here in the room for your attendance at this public meeting. And I also would like to thank the CSB team that is sitting here in the front for their dedication to both of these two projects.

I also want to mention my fellow Board Member Mark Griffon for his comments here today.

And all of us share a strong interest in preventing these tragic explosions and chemical releases in the future.

I also would like to reiterate my recognition and thanks to Senator Rockefeller for his consistent support for -- to obtain for the agency the necessary resources to conduct our mission.

Moving forward with our Freedom Industries investigation we will all be
working together with the staff to see that
the important recommendations are developed to
prevent future accidents that affect the
health and safety of local residents and
businesses and their implications for the
nation.

I would again like to thank all of
you today and to the audience and the staff.

With that this meeting is
adjourned.

(Whereupon, the above-entitled
matter went off the record at 2:34 p.m.)
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