In this two-year-old video, the challenge/danger of how to transport, dispose of lithium batteries is discussed. In order to site a BESS facility, transportation needs to be considered. Damaged lithium batteries are prohibited from being transported through tunnels, and cannot be transported in Seattle. What if a BESS lithium battery presumed to not be damaged is allowed to be sited somewhere that it is not allowed to be transported from after it's damaged?

Commenters on Seattle Times articles are asking why don't they site BESS lithium batteries in the empty buildings in Seattle?

Concerns that I have after watching the video:

- a lot of undue risk because of a lack of knowledge from all parties
- at the federal and state level, funding hazmat is not trickling down into the battery realm
- who is the ultimate authority having jurisdiction?
- who is the ultimate responsible party?
- the responsible party may be dead or has disappeared
- who's gonna pay for the cleanup? Because cleanup of these batteries are very costly.
- It takes a long time to remediate the environment in the area around it.

The video is a conversation between two SMEs – one is a volunteer firefighter/mechanical engineer/battery guy who has designed lithium batteries for EVs, the other is a HAZMAT trainer from Tacoma describing how Eastside Fire and Rescue handled a tractor trailer truck's lithium fire on I90.

Washington DDR [Damaged, Defective or Recalled] **Battery Fire: Hazmat Insights on Explosion Hazard in WA, Eastside Fire and Rescue**

> Posted by StacheD Training Jul 16, 2024, 20 minute video
>
> https://youtu.be/q2toqzqSaUI?si=dWfVgrFVOSUBwzV9
>
> Chris Pfaff, a local hazmat technician, provides an in-depth look at a semi-truck fire and explosion on a Washington State highway caused by lithium-ion batteries. Understand the risks and response tactics involved.
>
> https://www.hazmatandrescue.com/

Transcription from YouTube with minor edits

Chapter 1: Introduction to the incident

0:00

There was an incident on a Washington State highway where a semi-truck trailer burst into flames. The cause? Lithium ion batteries.

I had a chance to speak with a hazmat technician from Washington State who shared some eye-opening details about the incident.

Here today I have Chris Phap from hazmatandrescue.com. He's a fire instructor and hazmat technician in Washington State. Not only did he witness this incident, but he also has a lot of contacts at local agencies that dealt with this incident.

So Chris, why don't you tell us a little bit about this incident and what you know.

Chapter 2: Initial fire response

On July 9th, East Side Fire and Rescue responded to a semi-truck trailer on Interstate 90 westbound. This was for a trailer that was leaving Spokane, Washington and delivering products to Seattle, Washington. As they were coming down some quality paths, the truck driver identified some white vapors coming out of the trailer, knew that this was a potential indicator for a lithium ion battery event, pulled over on the side of the freeway, disconnected his tractor from the trailer, and then he proceeded to call 911.

East Side Fire and Rescue responded rather quickly and the hazmat team was attached to the first alarm response.

Chapter 3: Explosion and cargo details

1:11

While there, the incident commander ended up working about 50 to 100 feet away from the trailer and they were working on offensively fighting and extinguishing this fire, which at that time they did not know was holding lithium ion batteries. There were no placards in it. At that time they had not obtained the bill of lading. So they were attacking it just like a traditional structure fire or traditional semi-truck trailer fire. It was at that time an explosion occurred from the release of the vapors that were contained within the lithium ion batteries, blowing the back doors pretty much off.

And the quote that we ended up getting from the incident commander is, I've never seen something flex that much. And we were asking if it was the drums or anything else. It was literally the walls of the trailer that had bowed on out. So this was a deflagration event with some serious magnitude. He upgraded the response at that time, and there was probably a couple thousand gallons of water applied. The responders and the hazmat technicians on

scene at that time, they were able to get at least the information on what was being shipped.

Chapter 4: Shipping hazards and risks

2:12

Now the shipper, well, they have offices in Spokane, in Seattle and in Kent, Washington respectively. And they ended up doing remediation of recycled materials for e-cycling. They do not do battery recycling in any way, shape or form. And they do not go and collect. They end up taking delivery of e-cycle waste to go distribute it and send it into other places. Batteries have kind of become one of those extra things because a lot of people are considering lithium ion batteries part of e-cycling waste. So they still do not have their plans set up at this point.

When we look at the bill of lading and the hazmat tech was identifying this, there were a lot of fluorescent light bulbs that were in the front of the trailer. There were nickel, middle, high drive batteries. There were lead acid batteries. There were lithium ion batteries and over packs with cell block properly shipped and labeled. And then there were pallets of loose lithium ion batteries at the back of the trailer. Those are the batteries that are in question that ended up going into their thermal runaway and caused this initial explosion. And we've seen batteries shipped like this catch on fire multiple times before. And a lot of it has to do with the packaging. You've got these loose batteries, either in drums or they're palletized in these large cardboard boxes. The weight of the batteries on top of each other, they compress the batteries. It can cause damage, mechanical damage and cause fire.

Or because of the way they're bouncing around inside the container or they're not protected, the terminals aren't protected. They can short out and cause fires. So this is really a hazard. And again, we've seen it multiple times.

So overall, how long was the fire department on scene?

Chapter 5: Incident cleanup and recovery

3:48

East Side Fire and Rescue was there on scene for about three hours initially for this call, applying a couple thousand gallons of water, like I said before, they had to recover a lot of the batteries off of the highway of Interstate 90. And then they ended up using over packs that were provided by the shipper to over pack about a third of a 55 gallon drum with batteries, cell block and making sure that that was safe. They handed all of that back over to the shipper so then they could deliver that to its final termination in Seattle. That time they pretty much cleared scene.

Other representatives from Washington State Patrol, Washington Department of Ecology were contacted and they went through the entire step process to make sure that the public was safe as well as the responders were safe.

Just to touch on something you mentioned earlier, one of the challenges right now, there's no good way to know what's inside of these semi-trucks. You said there was no placards on the outside of that vehicle. And that's because there's no real system in place right now to placard lithium ion batteries. Is that pretty accurate?

Chapter 6: Regulatory loopholes

4:47

I've been speaking specifically to the Department of Transportation about this issue. DDR [Damaged, Defective or Recalled] batteries, no matter how many you have on a vessel, on a container, on any type of DOT, on a shipping paper, they do not need to be placarded on the exterior of the vessel. That would be the DOT class nine, the miscellaneous hazard. The label on the actual non-bolt containers does have to be in place. So if we have a 55 gallon drum or a pallet of batteries, there needs to be a label inside the container.

However, on the exterior of that vessel, they do have a specific exemption within DOT where they do not need to have a placard and we ship with them. It's really unfortunate because for example, this situation could have been deadly.

We had firefighters on scene fighting the fire, and then you've got a deflagration explosion. And this isn't the first time this has happened. We've got at least in the last few years, over a dozen different explosions involving semi-trucks due to these DDR [DAMAGED, DEFECTIVE OR RECALLED] batteries.

And just so everybody knows DDR is DAMAGED, DEFECTIVE OR RECALLED batteries.

Chapter 7: Transport risks in cities

5:51

And it's an important point that you speak about there as well, Patrick. This tractor trailer and this fire occurred at least about 20 miles east of Seattle in the greater Seattle region.

However, in its continuous route, if it would have carried on, it would have gone through at least two tunnels to make it to the end termination. And there's some restricted routes in our larger inner cities like Seattle, Washington, where hazardous materials cannot be transported. If there's a placard on the exterior, it's pretty easy for a state patrolman to identify that they are transporting this on an illegal path of travel.

However, with there being no placards on the exterior of this vessel, it looks just like a normal consumer commodity carrier, and they can get through, even though they're breaking the law, they can get through without representatives being notified.

Yeah, and that can cause some major issues, not only for the local jurisdiction, but for the fire department, for everybody involved, we're in a situation where that could cause a loss of life eventually here. And these types of fires are occurring fairly frequently. Just in the last couple of months, we had one in Georgia, we had one in Michigan, my home state.

Chapter 8: Lack of incident tracking

6:59

The biggest issue is we're not tracking these types of incidents, and it's very difficult to even find out about them unless you're really searching for them. And that's the big thing, Patrick. A lot of these events look, at least according to the news, they look like a minor event. It's just a semi-truck fire that might make the blip on the six o'clock evening news for about 20 minutes into the show.

It's not that catastrophic of an event, at least with the news media sees. If we end up losing a firefighter or some civilians, it will turn into a much larger event.

Chapter 9: Historical safety lessons

7:30

And that's where the biggest thing that a lot of authorities have in jurisdiction, a lot of bodies out there are trying to push against. We do not want to lose firefighters.

Really quickly, when I was talking to my Washington State patrol representatives, one of the biggest reasons why I'm trying to push this out is because of the Kansas City Fire Six. Back in the 70s, six firefighters ended up losing their life because they offensively fought a tractor trailer fire. The trailer was in the middle of a yard, and it was carrying, I think it was dynamite.

But there was no placards on the exterior because the owners were worried about the dynamite getting stolen. Placards, people will be able to know that there's dynamite. So they removed the placards, and then a subsequent arson fire, I think it was. But don't quote me exactly on that. But unfortunately, what happened is they ended up attacking this fire in an offensive fashion, having catastrophic results from it, which that unfortunate result changed to the DOT requiring placards on these containers, whether they're being shipped or whether they're being parked at every single time.

The last thing I want to see is a firefighter being killed or a civilian being killed, which will motivate DOT and FIMS to change that wall. Hopefully we can have that changed prior to that.

Chapter 10: Need for better regulation

8:41

Yeah, and it seems like it takes an act of Congress sometimes to get these types of changes through. Realistically, we need some type of placarding system, not only for your clean, your newly manufactured lithium ion batteries, but also a separate one for the DDR [DAMAGED, DEFECTIVE OR RECALLED].

I really think we need stronger regulations on how we're transporting these DDR [DAMAGED, DEFECTIVE OR RECALLED] batteries because they have been causing some major issues. Well, that goes into the waste management fires of the wrecking yard fires that we're seeing increase across the country.

Ryan Fogelman from FireRober has a lot of research on that with his tools and his tactics. But, you know, and this is anecdotal, but I've seen a ton more wrecking yard fires and waste yard fires.

Chapter 11: The tsunami of waste

9:23

Right now with EVs or with any type of consumer commodities or any of our lithium ion batteries, they're getting into that range that they're finally hitting their end of lifespan. And as we're seeing this tsunami of these DDR [DAMAGED, DEFECTIVE OR RECALLED] batteries having to be retired and shipped and disposed of an improper location.

There are a lot of recycling facilities that are working on spoiling up the tools to recycle these in a safe and effective manner. However, getting them from a location to that recycler right now, making sure we have proper placards and proper regulations to ensure that these are safely done right now, it seems to be lacking. And you are correct that it will take a literal act of Congress, unfortunately, to change some of this. With the situation we were just talking about, your incident over in Washington, it didn't end on the side of the highway.

Chapter 12: Reignitions during transport

10:08

That's correct, Patrick.

And really quickly, the day of the event, that trailer rekindled one more time, three hours later, when they were actually trying to remove the battery from the trailer from the freeway, they got it about a thousand feet down the road, and then the recognition occurred, probably most likely from the vibration, the shaking, water contamination, shorting, other things like that. So they started seeing venting, they pulled back to the side of the road again, called Eastside Fire and Rescue. Another 12 hours later, they ended up having another re-ignition of that trailer on the side of the freeway.

It was 24 hours later that that trailer was finally shipped and stored and secured enough for them to actually begin the transit.

And ironically enough, I was coming from Spokane, Washington back to the west side of Washington, where I live, and I decided to go past the site. I did not see the trailer or the cleanup crew at that time. It took me a long time because I was in heavy rush hour traffic in the afternoon, but by about 8.30 in the evening, when I was on my way home, I literally caught up to the trailer with a very good escort of the tow company, I wanted to at least add. They were actually getting off the freeway at that time with the trailer.

In very bad condition, I could see that the final batteries had been tarped with a blue tarp wrapped over at the back of the trailer.

Chapter 13: Challenges in communication

11:24

They had a front escort and they had a back escort. Luckily, I was able to identify the name of the tower, and I knew the location where that wrecking yard was, which is six fire districts away from where this initial location was, 30 miles.

It drove through all of these different jurisdictions on major highways during rush hour traffic. I called the fire marshal of this second fire department and gave him the heads up to inform his battalion chiefs, their shift commanders, that, hey, you guys have a battery that could potentially go into thermal runaway because it had three times on one of our neighboring departments.

And nevertheless, the next day at two o'clock in the afternoon, the battery reignited. Luckily, the fire department was on scene. They were informed. But right now, having some random guy driving down the freeway, identifying that, that's not the most efficient way for us to get the communication across the multiple fire authorities and multiple law enforcement agencies and multiple communities and counties to be aware of where the hazards are for these. - Yeah, and they didn't have any type of apparatus following that damaged trailer, did they? It was just the tow trucks?

- That's correct.

It was just the tow trucks. So the truck and trick, they ended up actually having a tractor towing it, towing the trailer. It was still at least mobile enough for them to transport it that way. And then they had at least a class three wrecker at the, at a class three wrecker behind.

Chapter 14: Jurisdictional handoffs

12:44

No fire apparatus. And that's a difficulty right there, once again, when you start talking to fire departments, do we want a fire department or a fire department apparatus transporting or escorting this tow like they did down in South Metro, Colorado with the damaged EVs back in January?

Well, we're crossing across, we're crossing six jurisdictional boundaries for fire departments. Is it the authority of the first agency to continue the whole way?

Or do they end up handing off to the next fire department as they go through? In my county with one of our teams, we're having discussions on do we do a handoff or do we just end up having it with that one individual agency while they drive through the three other agencies?

And that's gonna be up to authorities having jurisdictions to make that decision. But it's important to have that discussion before it happens. So then we know what the plan could be or should be instead of just making up at two o'clock in the morning. Right, I really think the best way to do it is to have some type of handoff because being able to hand it off, at least now that jurisdiction knows that they've got these damaged batteries going through their jurisdiction. Yes, and I think that's one of the big things that does have to happen with these batteries. And especially if they're damaged, that they've been known to be fire damaged, just like EVs, if it's been known to be fire damaged, we do know that there's a critical time

Chapter 15: Specialized firefight tactics

14:01

for these things to potentially reignite up to days or weeks later. But those first few days are very, very significant and critical time for those batteries to reignite. And if those fire departments of those neighboring agencies or the fire departments of the highways of thoroughfares, that these batteries, these fire impinged damaged batteries are going through, if they're not aware, those responders are gonna be caught off guard thinking it's just another semi-truck fire.

So it comes on down to making sure that we do have, and I think that's the biggest thing in all the conversations that you and I have had previously, Patrick, is if anything, this needs, we need to have better discussion and communication between fire departments, between emergency management, between law enforcement, between the ecology representatives, between cleaners, every single step of the way needs to have communication.

We need to know what's going on, because this is a different game than an ICE vehicle, a gasoline or a diesel type of vehicle. These are different types of hazards that can reignite at any time. And we have to be aware of that potential hazard in that it's a different type of firefight than a traditional structure fire.

Chapter 16: Tactical decision making

15:05

Right, and there's a lot of people that think that lithium ion batteries are like any of the other hazards that we have dealt with over the last 10, 20, 50 years.

But realistically, this is a whole different animal where you think you have the fire out, it really isn't, you can have a deflagration hazard, but there's just a lot of additional risk involved because it is a self-oxidizing chemical reaction. So that's where the struggle really is.

I agree whole heartedly. And it is that potential reignition and thermal runway that kind of puts it more into the hazmat background, that's why I've gotten a little bit into it, but batteries are not hazmat,

> *Peggy comment not from video, disagreeing with the statement "batteries are not hazmat"*: **Lithium-Ion and Lithium Metal:** Regulated as **Class 9 (Miscellaneous Hazardous Materials)** by the U.S. Department of Transportation (DOT)

and I will state that all the time up and down. They do have a potential hazmat component during the cleanup, but you are correct.

This is a different beast than any other type of hazardous materials or structural firefighting or traditional firefighting event that when we put the fire out, unless we didn't put out a tiny little amber or ash, we're not going to have a rekindle.

It's almost guaranteed, I wouldn't see every single time, but there's a very, very high likelihood. When you extinguish this large of amounts of batteries, there's a very high likelihood for a rekindle. And then the question comes on down to how do we want to fight this fire or do we want to fight this fire?

We need to remember and go back to those tenets of value, time, and the signs for people, for property, and for the environment. Well, what's the value for people if we know that it's already ignited? We usually isolate it according to SAE standards, and that's the biggest thing that a lot of the wrecking yards are getting trained up on right now of making sure that these batteries are put into an isolated area.

So that second time that it reignites at an empty yard in an industrial area, and there's no other hazard of people or property, the only thing right now that we're protecting is the environment. And one of the conversations I've been having with Providence Insurance, I'll be talking to them, is do we let it burn or do we aggressively extinguish it?

Going back to the beginning of what you just said right there that we have to treat this differently, maybe we do not want to put these fires out initially every single time.

It may be better just to let it burn. That's gonna be a tactical decision up to the incident commander, but those plans and those discussions need to take place before the calls come out. Highly dependent on the location of the fire too, and that's another big struggle.

Chapter 17: Long-term site hazards

17:20

There's no one size fits all solution right now, and we still have to do a lot of study in this area to really understand what's going on. Going back to the original incident, it's been days since that trailer was moved to the salvage yard, and those batteries are still on board, very likely still a hazard involved with this whole situation.

Well, there absolutely is right now, Patrick. The trailer's still sitting in a wrecking yard.

This is only as of a few days ago. I don't know if it's rekindled over the last two days or so.

And obviously the cleanup and the remediation needs to occur between the tote company, between the shipper, and of course the fire department needs to at least be aware, as well as the community members of the LEPC's emergency management and ecology to make sure that it's done safely and properly.

Chapter 18: Communication failures

18:06

And we're starting to see OSHA starting to find agencies for this. So right now there's still more to come. There's a lot of after-actions coming. The biggest failure that I think that happened from this, luckily no firefighters got hurt, nor did those civilians got hurt, but we ended up having a lot of undue risk because of a lack of knowledge from all parties and the

communication chain breaking down of the fire department asking for some support from some other members and them denying the support because it didn't sound, it wasn't framed appropriately enough, improperly enough to bring in other support right now.

So once again, back at that federal and that state level, we're funding that we typically see in the hazmat realm, it's not trickling down into the battery realm. So who is the ultimate authority having jurisdiction? Who is the ultimate responsible party? Well, their responsible party may be dead or that responsible party has disappeared. Who's gonna pay for this cleanup? Because cleanup of these batteries are very costly. It takes a long time to remediate the environment in the area around it. So my hats off to the crews that ended up responding to each of the fires in each of the jurisdictions, as well as everybody else.

They were doing what they could with the tools that they had. Unfortunately, right now, the training is not out there for them to know completely how to a DDR [Damaged, Defective or Recalled] ess each of these hazards.

And I wanna thank you personally for the work that you're doing here with this channel to provide people of all walks of life, the information, not just firefighters, but all responders, first responders, second responders, total law enforcement, ecology, emergency management, we're helping get that word out. And that's what's needed for this new and emerging hazard.

Chapter 19: Training and resources

19:43

Continuing to learn and training is really important. And that's why I became a fire instructor because I wanted to share my knowledge, but I also wanted to keep learning, keep up with the new trends. I really recommend you check out Chris's website, hazmatandrescue.com. We're both in the same area.

He's more on the hazmat side, but we both offer battery courses, courses on lithium ion batteries. And whether you take my course or his or both, you're gonna get something different out of each class you take. Thanks again for taking the time to talk about this incident and stay safe out there.

Comments (only one of 104)

@toomignon

2 years ago (edited)

Just happened in California, too. I15 closed for two days - major transport route with no alternative routes. 109 degree heat

Reply



@StacheDTraining

2 years ago

I just posted a video on that incident

Reference from comment above:

https://youtu.be/r0V6e3gOPYw?si=49Ur2tm5A98W_5oc

Disaster on I-15: Lithium-ion Batteries Cause Major Delays

Jul 30, 2024, 3 weeks after the semi in WA caught fire, a semi carrying an energy storage system on I 15 between Los Angeles and Los Vegas caught fire in 110°+ temperature.



I 15 in both directions was closed for two days. I don't know if any other emergency vehicles depend on that section of the freeway. This type of BESS is for portable energy storage for events. Moving it was difficult, it weighs 75,000 lbs.

3:33

While doing research for this video, I came across another incident that just happened today where a semi-truck hauling one of these energy storage systems was pulling into a gas station and rolled over on its side. Thankfully, because of the low speed impact on that one, there was no fire.