

**OREGON
OFFICE OF STATE FIRE MARSHAL**

**2020 ANNUAL REPORT ON
HAZMAT BY RAIL PROGRAM**



**Prepared for the 2021
Oregon State Legislative Assembly
February 1, 2021**

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Table of Contents

| | |
|--|----------|
| Executive Summary and Legislative Overview | 1 |
| HazMat by Rail Program | 3 |
| 2020 Program Investments Across Oregon | 3 |
| 2020 Emergency Response Training and Education | 5 |
| Response Resources | 5 |
| Strategies for Ensuring Adequate Funding | 7 |
| Continued Coordination Between State Agencies and Industry | 8 |
| Response Roles and Responsibilities | 9 |

Executive Summary

Legislative Overview

Governor Kate Brown signed legislation in 2015 relating to the safe transport of hazardous materials by rail. The law made changes to Oregon Revised Statute (ORS) 453.307 to 453.414 relating to the safe transport of hazardous materials by directing the Office of State Fire Marshal (OSFM) to coordinate training, preparedness, and response planning activities with a specific focus on oil or hazardous materials spills or releases that occur during rail transport. In part, the law mandates the OSFM to adopt by rule, a plan for the coordinated response to oil or hazardous material spills or releases that occur during rail transport, identify response resources (existing and needed), and to coordinate training for emergency responders. A copy of the full report is available on the OSFM website.



The OSFM HazMat by Rail program, in partnership with the railroad industry, assists local communities in training and planning for a rail incident involving hazardous materials. The program works closely with local emergency planning committees (LEPC), public health officials, law enforcement, and the fire service. Funding for the program is used to create rail response plans, commission commodity flow studies, conduct table-top exercises, and procure rail specific response equipment. The program also provides training for emergency personnel to respond to rail incidents around the state.

In 2020, the HazMat by Rail program faced both challenges and successes. Due to the COVID-19 global pandemic, many in-person trainings and exercises were suspended to comply with social distancing requirements. These safety precautions created an opportunity for the program to focus on investments in training props and response equipment, as well as reevaluate the Oregon Fire Service response needs and capabilities.

ORS 453.392 guides OSFM to provide the Oregon Legislature with an analysis of plan for the coordinated responses to oil or hazardous material spills or releases that occur during rail transport. Below is a summary of key area of improvement:

Strategies for ensuring adequate funding at the state and local government levels to cover the training, equipment and administrative costs associated with providing comprehensive response and equipment.

- With demonstrated investments in preparedness, response readiness, and the forward-deployment of resources across Oregon, it is critical that funding for the OSFM HazMat by Rail Program continue to be a top priority.
- OSFM plans to perform a comprehensive review of program expenditures which incorporates long-term program issues such as new threats, emerging technology, and other program advancements necessary to keep Oregon prepared and safe.

Possible changes to the structure for continued coordination between state agencies and Industry:

- Recommend that the rail industry adopt a standard notification process to both state and local agencies when rail commodities are temporarily stored along railways.
- Oregon lacks comprehensive checks and balances to mitigate risk of a rail incident occurring on parked railcars located on spur lines.
- Recommend that the rail industry provide OSFM a precise accounting – rather than an estimate – of High Hazard Flammable Trains traveling across and through Oregon.

Possible revisions to the response roles or responsibilities to state agencies, local governments, and railroads.

- Based on data from 2020 incident frequency, commodity flow reports, and poverty density mapping, analysis suggests that the rail industry, as well as other state agencies, prioritize resources in the communities of Multnomah, Lane, Klamath, and Deschutes County to reduce probability of a large or catastrophic incident.

An inventory of all emergency response resources available in this state.

- Based on a survey of fire departments across the state that have railroad lines in their response jurisdictions, the OSFM has identified the need to make investments in personal protective equipment, air monitors, firefighting foam applicators, floating boom, and sorbent boom.

HazMat by Rail Program

Governor Kate Brown signed legislation in 2015 relating to the safe transport of hazardous materials by rail. The law made changes to Oregon Revised Statute (ORS) 453.307 to 453.414 relating to the safe transport of hazardous materials by directing the Office of State Fire Marshal (OSFM) to coordinate training, preparedness, and response planning activities with a specific focus on oil or hazardous materials spills or releases that occur during rail transport. In part, the law mandates the OSFM to adopt by rule, a plan for the coordinated response to oil or hazardous material spills or releases that occur during rail transport, identify response resources (existing and needed), and to coordinate training for emergency responders. A copy of the full report is available on the OSFM website.

The OSFM HazMat by Rail program, in partnership with the railroad industry, assists local communities in training and planning for a rail incident involving hazardous materials. The program works closely with local emergency planning committees (LEPC), public health officials, law enforcement, and the fire service. Funding for the program is used to create rail response plans, commodity flow studies, tabletop and full exercise response scenarios, and procure rail specific response equipment. The program also provides training for emergency personnel to respond to rail incidents around the state.

This report analyzes four areas of the statewide coordinated response plan as guided by ORS 453.392(3):

- An inventory of all emergency response resources available in this state including information on:
 - o The location of, and the means of access to, the resources;
 - o Whether the resources are publicly or privately maintained; and
 - o Additional resources that are needed to provide for adequate response
- Strategies for ensuring adequate funding at the state and local government levels to cover the training, equipment and administrative costs associated with providing comprehensive response and equipment.
- Possible changes to the structure for continued coordination between state agencies and Industry:
- Possible revisions to the response roles or responsibilities to state agencies, local governments, and railroads.

2020 Program Investments Across Oregon

The OSFM maintains a HazMat by Rail plan as an annex to the Office of Emergency Management Emergency Support Function (ESF) 10: Hazardous Materials. Throughout the year, the HazMat by Rail program supported planning efforts, training opportunities, and equipment procurement to increase viability and effectiveness of this plan.

In partnership with the OSFM LEPC program, the HazMat by Rail program was able to provide funding opportunities where otherwise strained local funding is limited by city and county budgets. Due to the COVID-19 pandemic, many of the planned exercises and trainings in 2020 were suspended to comply with social distancing and spread

OSFM 2020 Annual Report on HazMat by Rail

reduction efforts. As a result, program funding was allocated towards investment in training props, response equipment, and establishing intergovernmental agreements.



In April, at the Department of Public Safety Standards and Training's (DPSST) facility in Salem, an ammonia railroad housing was welded to the side top of a DOT111 training prop car (a retired railcar installed through the HazMat by Rail program in 2017). The welding project enhancement allows for firefighters to train on different types of rail housing which require various equipment, including the Midland Kits.

In September, the HazMat by Rail program procured eight Midland capping kits for the HazMat Emergency Regional Response Teams. These kits can fit on rail housing where products typically enter and exit the rail car. Midland kits are specifically designed to stop a leak on pressurized railcar housing which typically transport chemicals such as ammonia. The release of ammonia into a community can result in devastating affects to life safety. By responding to an incident with a midland kit, it can substantially decrease risk and exposure to a community. This capital investment increased capability for every regional team to respond to a hazardous material incident involving a leaking fitting on top of pressurized railcars. Previously, only 7 of the 13 teams had this response capability.



In December, the BNSF railroad donated a retired DOT111 tank car to OSFM as a training asset. The tank car was installed at the Portland Fire Training Center. The HazMat by Rail program funded the site preparation, transportation, and placement of the rail car from the BNSF railyard in Vancouver, Washington to the Portland Fire and Rescue Training Center.

Local access to this training asset will allow Portland Fire and Rescue, as well as other lo-

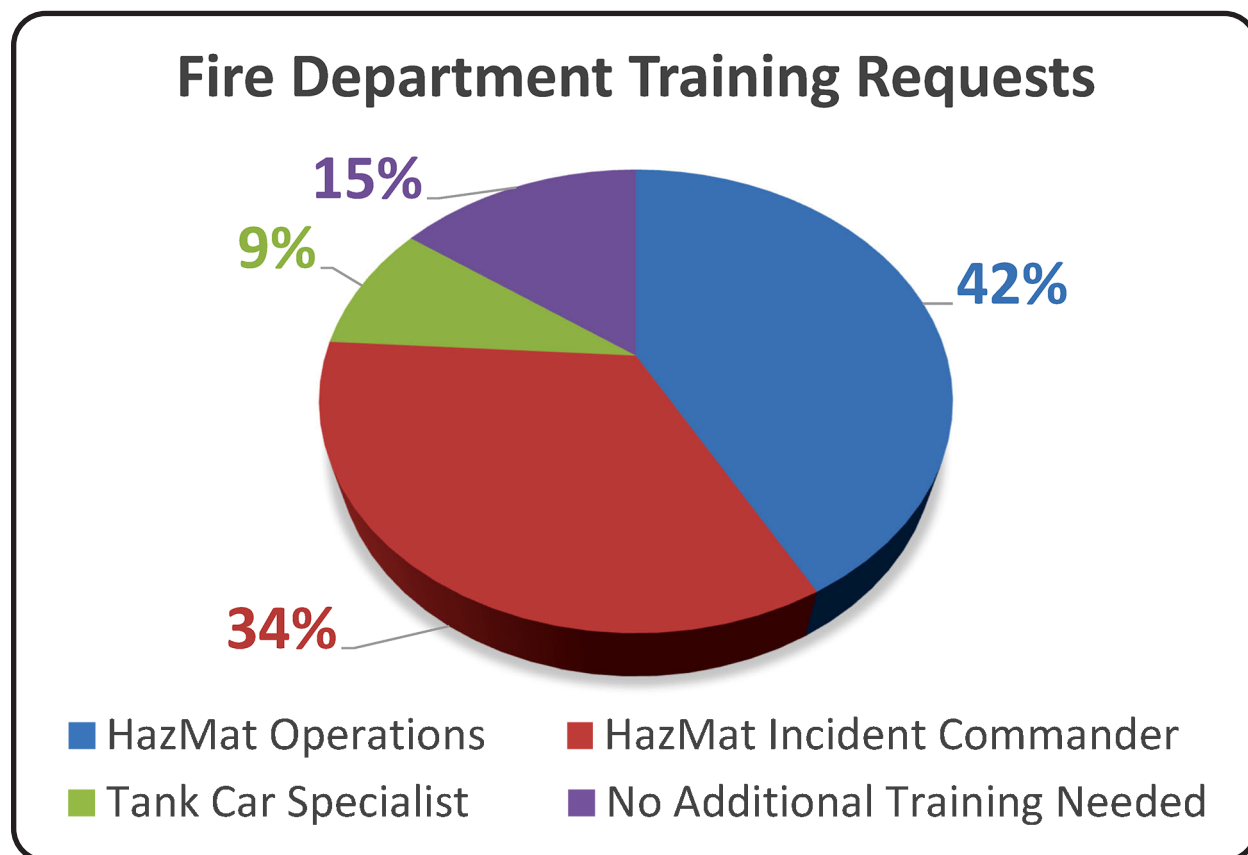
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cal governments, the opportunity to locally train emergency personnel to respond to rail incidents involving hazardous materials. This project expanded the increasing inventory of retired railcar training assets to OSFM's capital assets. A video documenting the project can be viewed online at <https://youtu.be/hMjJrjlyhDw>. Other retired railcars are located in Eugene, Salem, and Umatilla.

2020 Emergency Response Training and Education

In June, the Union Pacific and BNSF sponsored training for first responders in The Dalles and Redmond. Providing this training to these departments was critical to the success of the HazMat by Rail program as these agencies each host one of the eight firefighting foam firefighting trailers pre-positioned across Oregon. These railroad companies also provided virtual rail-based operations and awareness refresher courses to all fire departments across the state.

Due to limitations to provide in person exercises and training to LEPC's and firefighters, the OSFM has identified an emerging backlog of training needs. This was evident in responses to a survey answered by 91 of Oregon's fire departments and districts. Re-

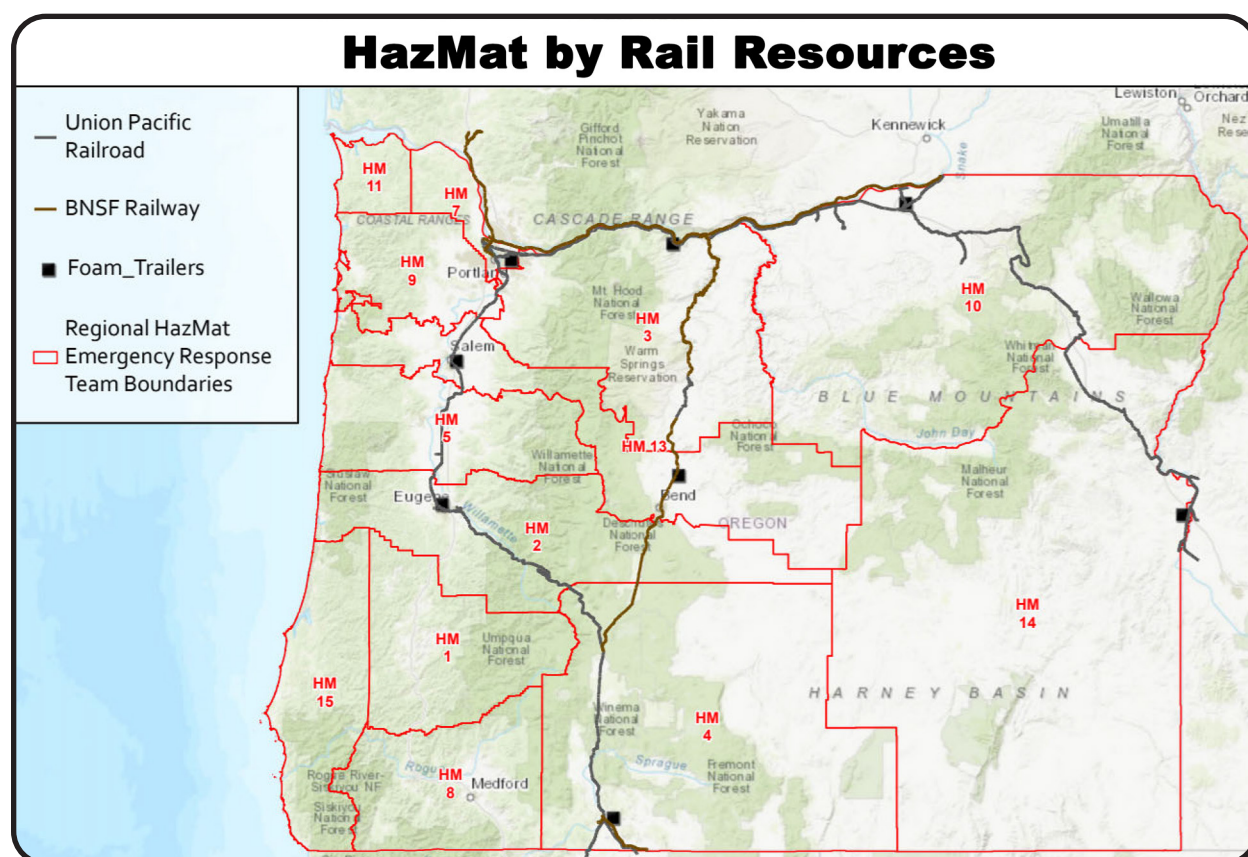


spondents noted that 42 percent of departments needed HazMat awareness- and operations-level; 34 percent hazmat incident commander; and nine percent need HazMat technician-level courses. Although the HazMat by Rail program has facilitated the delivery of thousands of hours of such training over the five years of its existence, many fire departments and districts experience regular turnover of personnel and volunteer responders, thus driving a continuous need to provide ongoing training opportunities.

Response Resources

The OSFM maintains an inventory of all emergency response resources available in Oregon on the Western Response Resource List (WRRL). The inventory is part of a list which serves a directory of oil spill response equipment ownership and steady-state location. Its purpose is to provide the response community and regulators with a current listing of response equipment. In this inventory, the OSFM includes eight foam trailers. These trailers are located in Eugene, Klamath Falls, Ontario, Pendleton, Portland, Redmond, Salem, and The Dalles.

- Eugene/Springfield Fire Department (co-located with OSFM HazMat Team #2)
- Klamath County Fire District #1 (co-located with OSFM HazMat Team #4)
- Mid-Columbia Fire and Rescue (located in OSFM HazMat Team #3 response area)
- Ontario Fire Department (co-located with OSFM HazMat Team #14)
- Pendleton Fire Department and Ambulance Service (located in OSFM HazMat Team #10 response area)
- Portland Fire and Rescue Bureau (co-located with OSFM HazMat Team #7)
- Redmond Fire and Rescue (located in OSFM HazMat Team #13 response area)
- Salem Fire Department (co-located with OSFM HazMat Team #13)



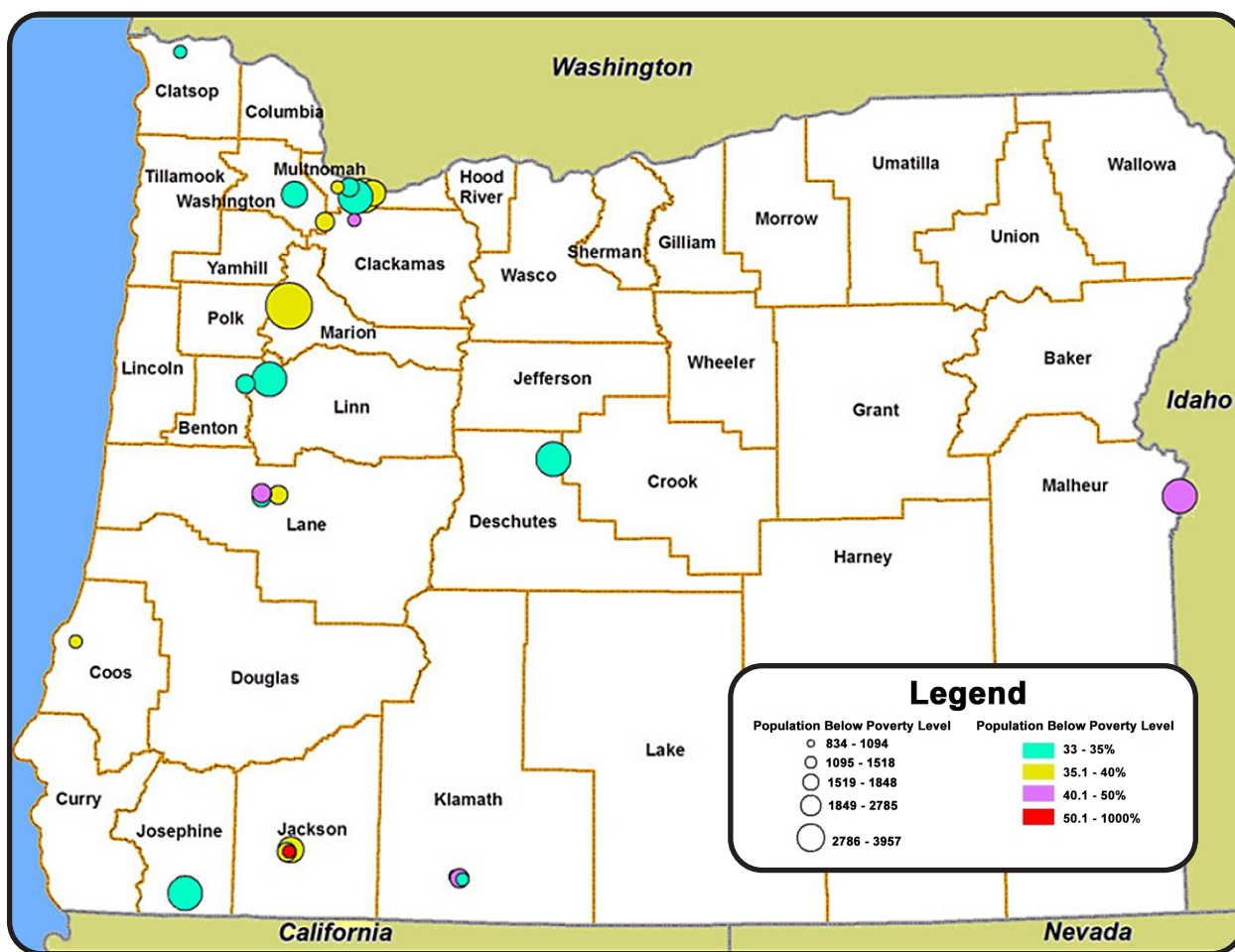
To access these trailers, the OSFM has intergovernmental agreements between the housing fire agency, as well as the railroad company, for use of the trailers. While the local housing fire department is responsible for checking the trailer for readiness, the railroad company is responsible for any required service or maintenance. Although

OSFM 2020 Annual Report on HazMat by Rail

these compacts satisfy Oregon's response capability for AR-FFF foam, other needs were identified in a survey to the Oregon Fire Service.

In December, the OSFM surveyed fire departments across the state that had railroad lines in their response jurisdiction. From the survey, these fire departments identified the need to investment in personal protective equipment, air monitors, foam applicators, floating boom, and sorbent boom.

Throughout 2020, due to limited program funding, as well as additional program objectives, the OSFM prioritized investments in response agencies and locales based on incident probability risk, common commodities shipped, and serving areas of vulnerable populations. To identify the latter, OSFM leverages the Department of Human Services (DHS) Areas of High Poverty Density Map.



[https://www.oregon.gov/dhs/business-Services/ofra/Documents/Area of High Poverty Density.pdf](https://www.oregon.gov/dhs/business-Services/ofra/Documents/Area%20of%20High%20Poverty%20Density.pdf)

Strategies for Ensuring Adequate Funding

KEY PROGRAM PRIORITY: With demonstrated investments in preparedness, response readiness, and the forward-deployment of resources across Oregon, it is critical that funding for the OSFM HazMat by Rail Program continue to be a top priority.

As with most government programs, capability to serve end users is limited by the funding available to provide the service. The HazMat by Rail program currently operates on a \$250,000 budget and receives all funding from the general fund. During the 2020 budget reduction exercise, the Oregon State Police identified the program for a 15% reduction and the second highest agency priority for reduction. Although this reduction, as well as all OSP budget reductions, were vetoed by the governor, a funding threat to the program was identified.

AREA OF IMPROVEMENT: OSFM plans to perform a comprehensive review of program expenditures which incorporates long-term program issues such as new threats, emerging technology, and other program advancements necessary to keep Oregon prepared and safe.

Possible Changes to the Structure for Continued Coordination Between State Agencies and Industry

This year, the OSFM was able to work directly with industry representatives from Class 1 railroad companies. The partnership was displayed throughout the year in both training and equipment donations.

There are two areas of improvement needed in coordination between state agencies and the railroad industry. The first is in regards to spur railroad track commodity storage. Currently, the owner or the leasee of a spur railroad line can store bulk amounts of hazardous materials in railcars. Due a lack of authority, this type of hazardous materials storage is largely unregulated by ODOT, DEQ, as well as other state and local agencies. In some cases, local authorities are notified that the potential hazard exists, but this is typically by word of mouth and without any state or local mandatory reporting or storage regulations. Public concern for this type of hazardous materials storage was evident in May 2020 when state agencies received a citizen concern regarding railcars parked on Highway 20 in rural Benton county between the cities of Albany and Corvallis.

AREA OF IMPROVEMENT: The rail industry should adopt a standard notification process to both state and local agencies when rail commodities are temporarily stored along railways.

AREA OF IMPROVEMENT: Oregon could benefit from comprehensive HazMat checks and balances to mitigate risk of a HazMat rail incident on parked railcars located on spur lines.

The second area of improvement is in the notification of high-hazard flammable trains (HHFT). Effective April 1, 2019, the Pipeline Hazardous Materials Safety Administration – or PHMSA – implemented a final rule to improve oil spill response readiness and to mitigate effects of rail accidents and incidents involving petroleum oil and high-hazard flammable trains (HHFTs). A HHFT is defined as a train comprised of 20 or more consec-

OSFM 2020 Annual Report on HazMat by Rail

| | |
|------------------------|----------------------|
| Union Pacific Railroad | January 14th, 2020 |
| Union Pacific Railroad | April 14th, 2020 |
| Union Pacific Railroad | May 5th, 2020 |
| Union Pacific Railroad | June 15th, 2020 |
| BNSF Railway | June 22nd, 2020 |
| Union Pacific Railroad | September 11th, 2020 |
| BNSF Railway | September 14th, 2020 |
| BNSF Railway | December 9th, 2020 |

utive carloads of a Class 3 flammable liquid, or 35 carloads of a Class 3 flammable liquid intermittently connected throughout the entire train. Docket No. PHMSA-2014-0105 (HM-251B) mandates that railroads must provide information to Oregon’s State Emergency Response Commission (SERC). Such reports were regularly received by the OSFM

| Estimated weekly number of High Hazard Flammable Trains (EXAMPLE) | | | |
|---|-------|---------|-------|
| County | Crude | Ethanol | Other |
| Deschutes | 0-1 | 0 | 0 |
| Multnomah | 0-4 | 0 | 0 |

Table 1 - Example of HM-251B reports submitted by rail industry to Oregon SERC

through its role as the SERC.

The OSFM acknowledges that the railroad industry is in compliance with the new law, but believes additional details need to be provided in the report. Although the reports do meet federal requirements, the information is overly broad and doesn’t provide enough details to adequately assess the risk involved in the transportation of HHFT.

AREA OF IMPROVEMENT: The rail industry should provide the OSFM a precise accounting – rather than an estimate – of High Hazard Flammable Trains traveling across and through Oregon.

Response Roles and Responsibilities

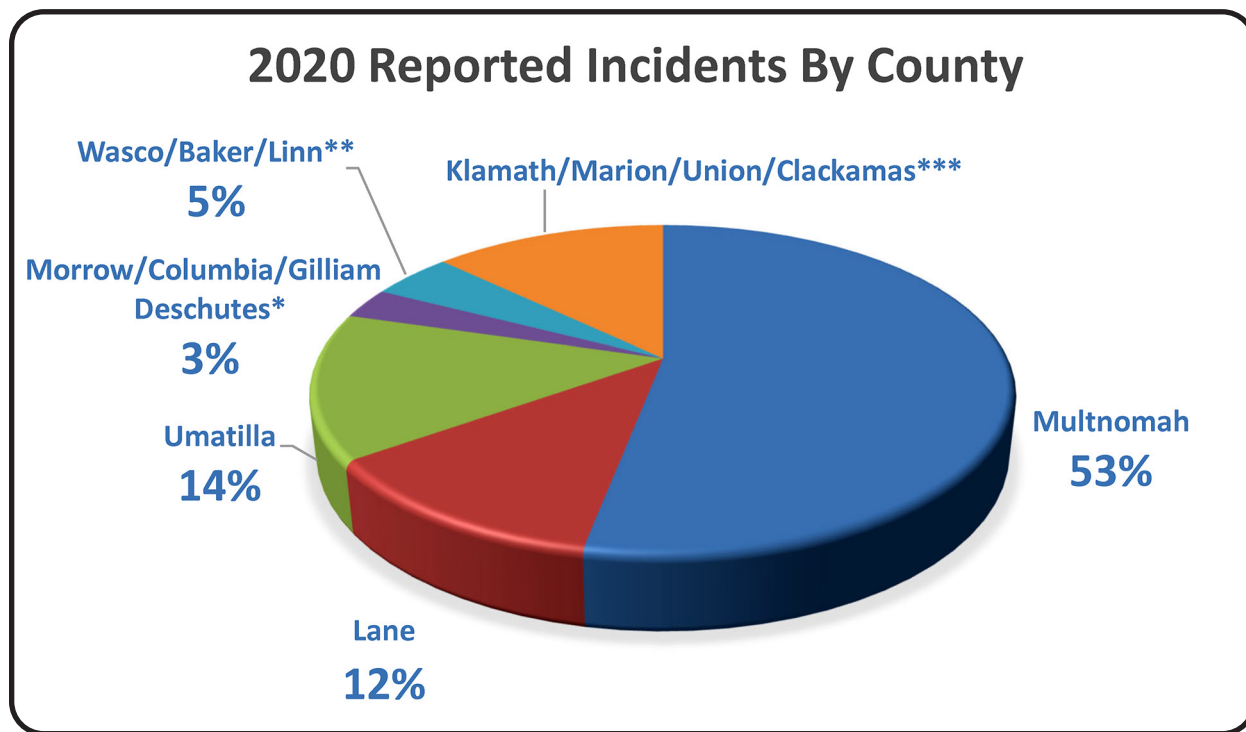
The clearly defined roles and responsibilities of state agencies, local governments, and railroads are necessary to coordinate an effective response to rail incidents involving hazardous materials. The OSFM maintains an ESF10 HazMat incident by rail response annex. In 2020, a group of stakeholders from across the government and industry were able to meet virtually, review the annex, and offer any modification or changes to the plan. The group supported the plan as written and did not offer improvements or modifications based on their own roles and responsibilities. By using data, OSFM has identified communities in Oregon to bolster local responder readiness and capability. Priority investments have been largely driven from a risk-analysis of incident data, trends in

commodity flow reports, and identification of vulnerable communities.

The Oregon Emergency Response System (OERS) coordinates and manages state resources in response to natural and technological emergencies and civil unrest involving multi-jurisdictional cooperation between all levels of government and the private sector. In relation to the HazMat by Rail program, this system notifies the OSFM when an emergency incident occurs on a railroad. An incident can range from a single car, upright derailment in a railyard without any release of hazardous materials, to the multi-car derailment that resulted in the ignition of released flammable liquids in Moiser in 2016.

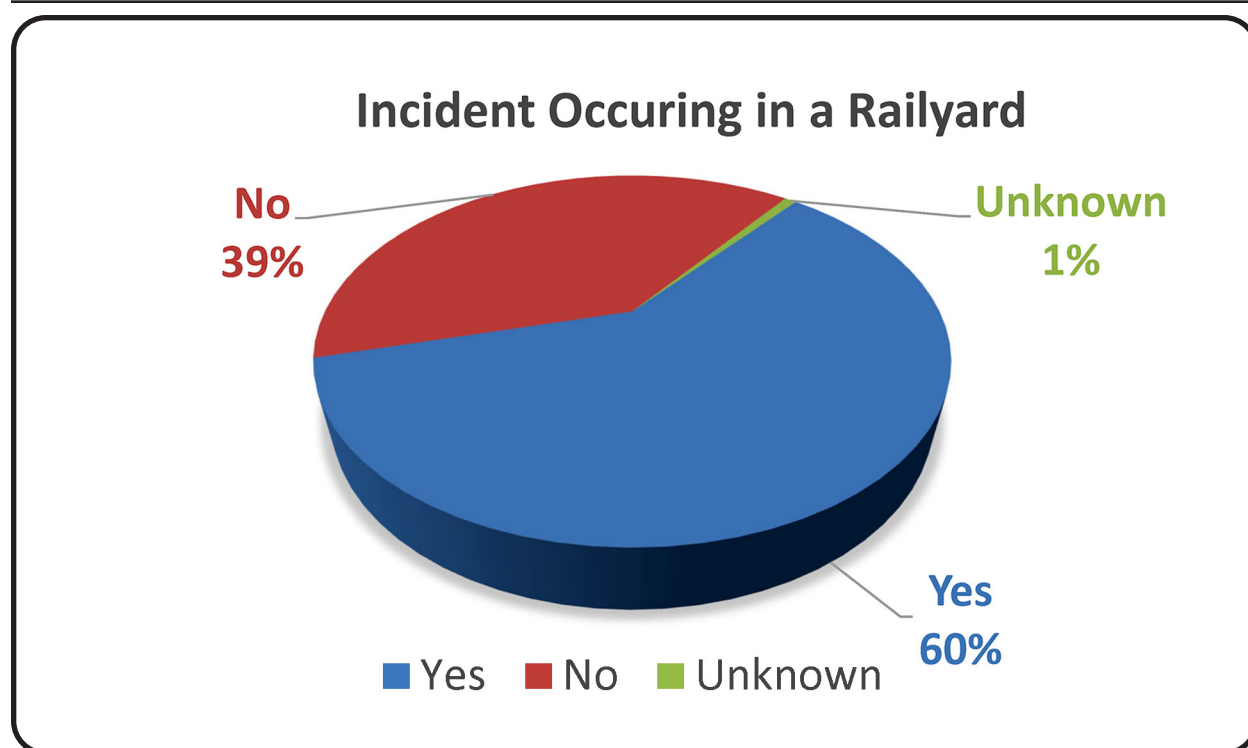
At the end of 2020, there were over 132 OERS reports involving Class 1 rail incidents. The following charts highlight the incident location by county, whether the incident occurred in a railyard, and percentage of incidents involving petroleum products.

In 2020 – compared to significant derailments experienced across the U.S. – most of Oregon’s documented rail incidents had minor impacts to public health and environment. Yet, these occurrences highlight the risk of a more catastrophic incident. To evaluate the risk exposure, the OSFM analyzes each notification of a rail incident involving hazardous materials reported to the OERS.

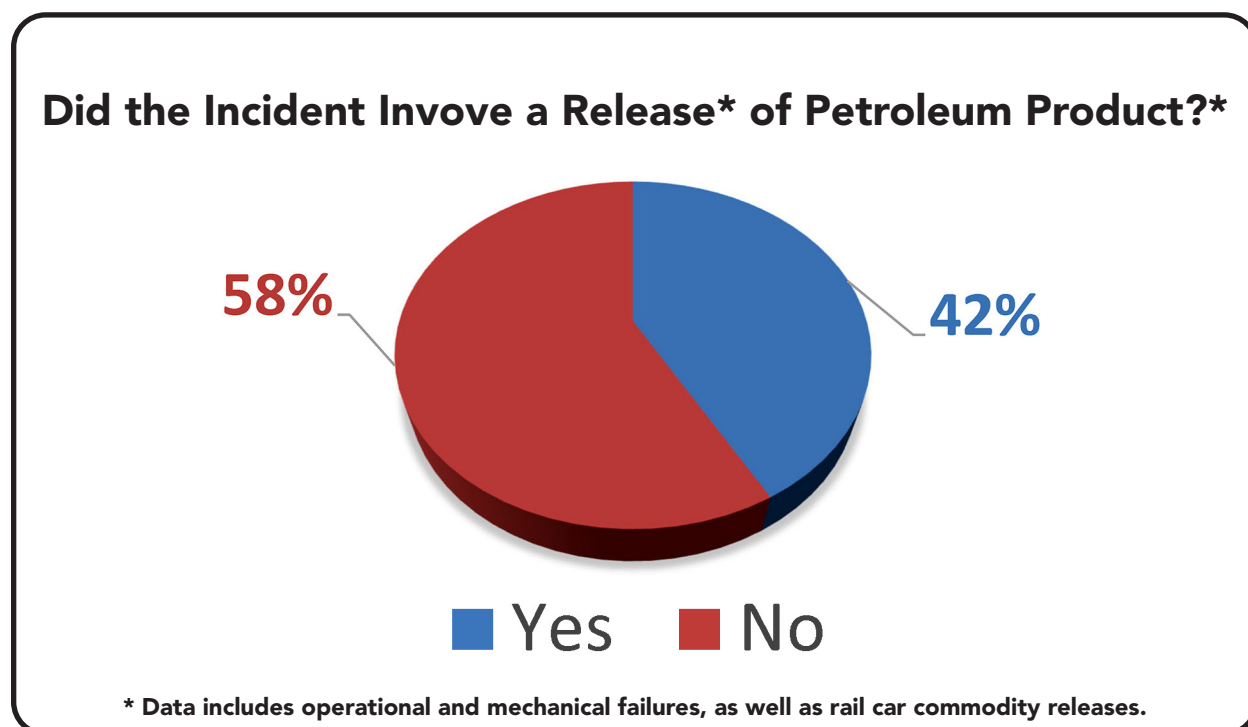


*One Incident per County
**Two Incidents per County
***Three to Five Incidents per County

Of the incidents reported in 2020, 79 occurred in the railyard while 52 have occurred while the railcar was in transit. One incident was reported as unknown.



In total, seven incidents met the US DOT PHMSA reporting requirements. Since 2017, according to the Federal Railroad Administration Office of Safety Analysis, total accident and incident counts have decreased for Class 1 railroads that operate in Oregon. BNSF has nationally observed a 14.5% decrease in overall incidents and 16.8% decrease in derailments. The Union Pacific Railroad has nationally observed a 13.3% decrease in overall incidents and 15.9% decrease in derailments.



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The variability in state versus national reporting is likely due to differences between mandatory reporting requirements and standards set by the State of Oregon and federal agencies.

By knowing where and when incidents have been occurring, the OSFM is able to target the investment resources into training first responders and procure response equipment to enhance capabilities. However, the incident location and frequency is only part of the risk exposure formula. To further define risk exposure, the OSFM partners work closely with the Oregon Department of Transportation Rail Division (ODOT Rail) to provide reports of quantities of hazardous materials shipped by rail through Oregon.

These quantities are reported to ODOT by the rail industry on a quarterly basis. To synthesize the data, ODOT has provided OSFM with the top 5 hazardous materials shipped by rail and delineated by hazard classification. The hazard classification allows OSFM to group individual chemicals together that have similar chemical properties. These chemical properties influence how emergency responders will respond and mitigate a potential hazardous materials incident. In 2020, the top 5 hazardous materials include, from the most hazardous to the least:

- Petroleum Crude Oil – Hazard Class 3
- Liquefied Petroleum Gas – Hazard Class 2.1
- Diesel – Hazard Class 3
- Ethanol-Related Products – Hazard Class 3
- Molten Sulfur* – Hazard Class 9

Due to security sensitive restrictions in data and limitations on public disclosure, the exact quantities of these chemicals are not included in this report. By identifying these top five common hazardous materials, the program can readily identify which types of equipment and training scenarios to invest in. It is important to note that local or county-based commodity type and volume may or may not necessarily align with state commodity trends. To tier a training scenario or investment in specialized response equipment, the HazMat by Rail program funds local commodity flow studies.

By overlaying incident frequency data, commodity flow reports, and poverty density mapping, the OSFM has identified communities in Deschutes, Klamath, Lane, and Multnomah Counties, as high priority for future investment in rail response planning efforts.

AREA OF IMPROVEMENT: Based on data analysis, the rail industry, as well as other state agencies, could prioritize investments in these communities to reduce probability of a large or catastrophic incident. Investment in these communities may help provide an agency or company with the necessary resources to diminish their weaknesses in response capabilities and other threats.



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