Emergency Response

State of Oregon

DEQ

“No plan survives contact with the enemy”

-Field Marshal Helmuth Von Moltke

What happens when the incident doesn’t go as “planned”

Overview

Topic	
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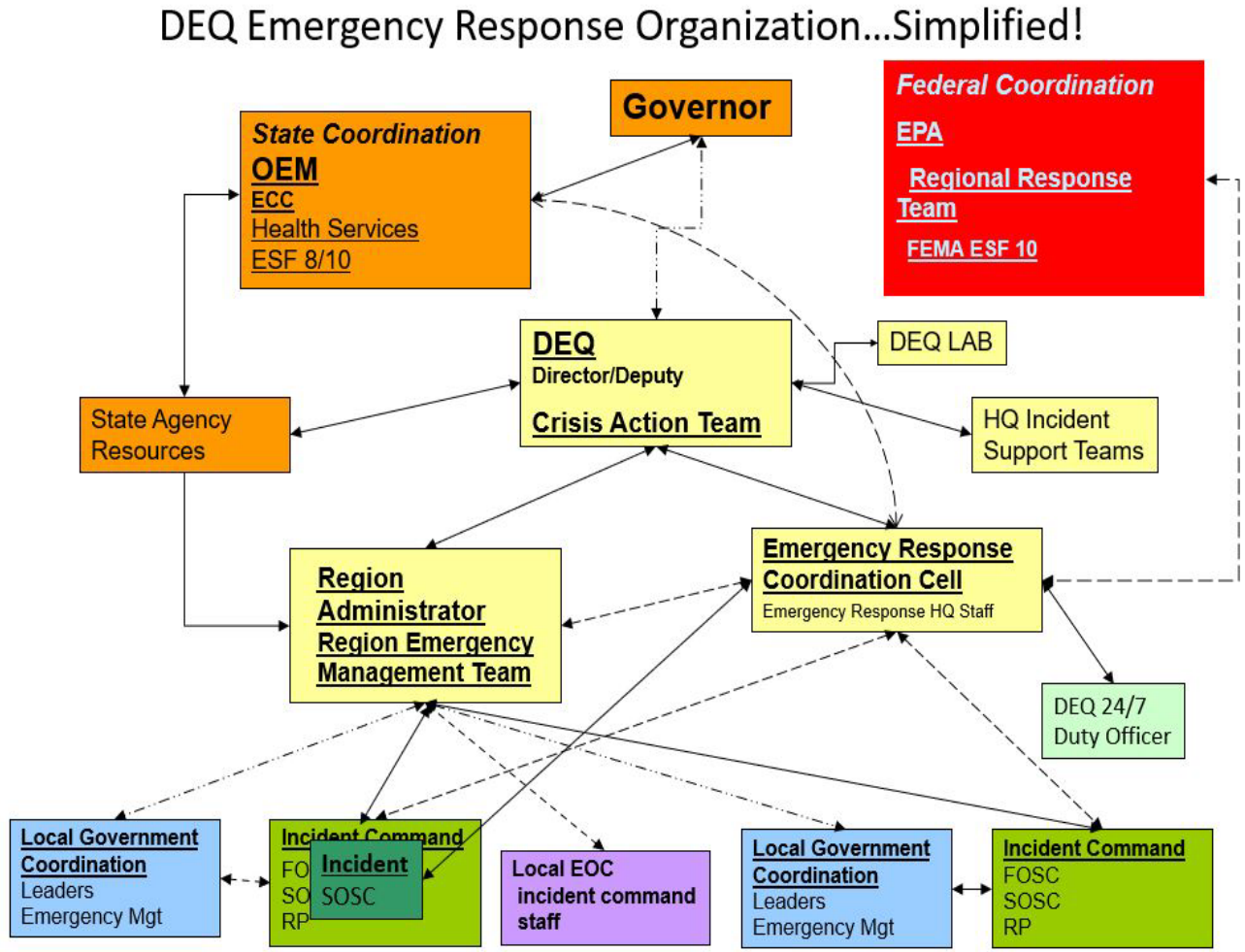
Incidents	
	- Mercury incident
	- RR Diesel incident
	- Renewable Diesel incident
Conclusion	



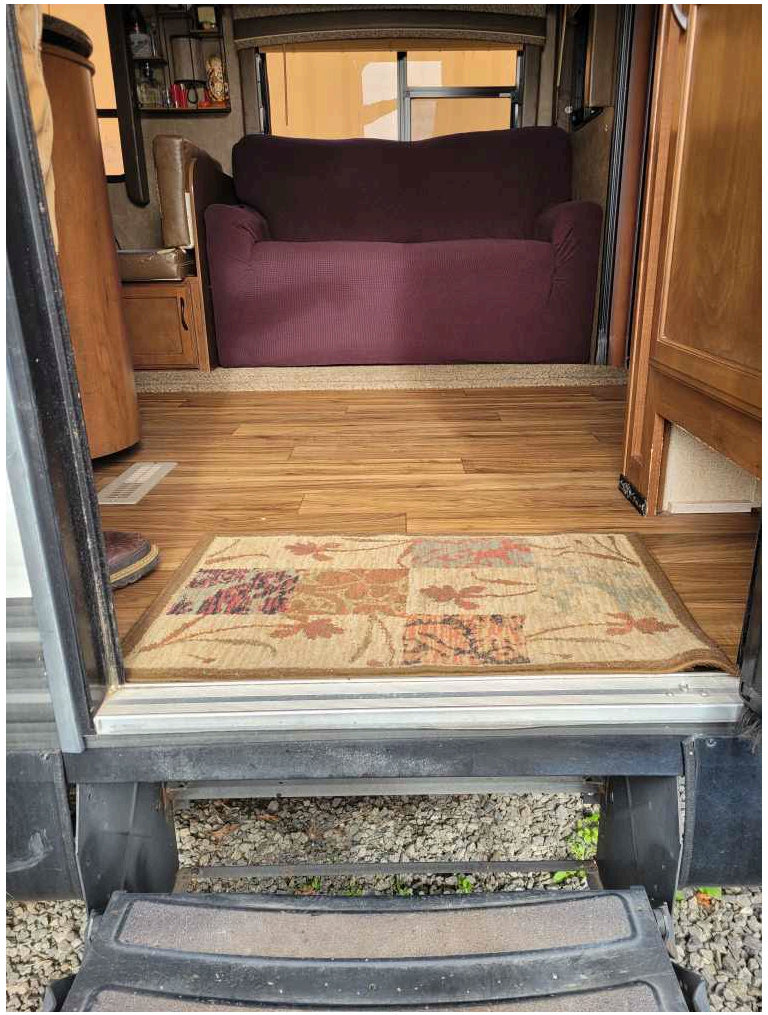
Introduction

- **DEQ Authority to respond:**
  - **ORS 468B.300 (29)(a)**
    - "State on-scene coordinator" means the state official appointed by the Department of Environmental Quality to represent the department and the State of Oregon in response to an oil or hazardous material spill or release or threatened spill or release and to coordinate cleanup response with state and local agencies.
  - **ORS 468B.300-500 Planning, ORS 465 Cleanup, 466 HM Response**
  - **Oregon Emergency Operations Plan**
  - **Northwest Area Contingency Plan**
    - **CERCLA**
      - **Release or Threat of Release**
        - » **Hazardous Substances**
        - » **Pollutants and Contaminants**
      - **"Imminent and substantial endangerment to human health or the environment"**
    - **OPA**
      - **Oil impacts or threatens to impact waters of the United States**

Mercury incident

- Notification from OHA about high levels of mercury in patients and possible Hg release
- Young family with limited English comprehension
- RV trailer is primary residence
- No spills reported, nor fish consumed or hobbies related to Hg
  - No known source
- Request came for DEQ to evaluate scene
  - No obvious source

Mercury incident



Mercury incident

ATSDR Chemical Specific Health Consultation – Mercury

Table 1: Suggested Action Levels for Residential Setting

Action Level (ug/m^3)	Use of Action Level	Rationale for Action Level	Sampling Suggestions and other Considerations	Consult Section
Less than 1	Acceptable level for normal occupancy for most sensitive persons. No further response action needed	Experience has shown that response actions to reach levels lower than 1 ug/m^3 can be disruptive enough to cause more harm than benefit. 1 ug/m^3 is within an order of magnitude of health guidance values and indoor background levels. This concentration is 25 times lower than the concentrations referenced in the development of health guidance values.	No visible mercury; highest quality data.* Sampling in breathing zone of most sensitive person under normal conditions for use.	See Sections 2.1 and 2.2.1
3–6	Acceptable level for unrestricted use of family vehicles under most conditions.	Exposure duration in most vehicles is short compared with other settings, allowing a higher concentration as the "floor" of this range. Requirement for no visible mercury means the source of vapors has been removed and concentrations should continue to fall The "ceiling" of the range is based on the presumption that liquid mercury may still be present but not yet discovered.	No visible mercury; highest quality data.* Sampling in the passenger compartment under normal use conditions. Unusual use of the vehicle in this case would be extended family vacations.	See Sections 2.1 and 2.5
3–6	Acceptable level to allow personal belongings to remain in owner's possession.	The sampling point suggested in the column to the right tends to concentrate the vapors higher than typical exposure conditions. Exposure frequency should be intermittent and the duration should be short. The 6 ug/m^3 is based on the possibility that liquid mercury i is present but may not have been discovered.	Survey instrument data generally acceptable.+ Readings should be at the vents of appliances or headspace of bags. Bags should be warmed passively to ambient conditions and appliances/ electronics should be at operating temperatures.	See Section 2.2.3
Greater than 10	Isolation of contamination from residents or evacuation of residents	Indications are that 10 ug/m^3 may be the concentration at which urinary levels of mercury begin to increase. Other studies indicate this concentration may be the lowest toxic concentration (TCLo) for humans. Continued exposure may be harmful.	Survey instrument data acceptable. + Exposure to contaminant should be minimized.	See Section 2.2.2

*Highest quality data is NIOSH 6009 analytic results or equivalent (e.g., Lumex reading averaged over 8 hours)
+Survey instrument data is considered any real-time monitoring equipment (e.g., Jerome, MVI, VM 300)

Mercury incident

Sample Location	Date	Approx Time	Hg vapor (ng/m3)	Comment
Outdoor air in parking lot	2/8/2023	1130	<35	
Outdoor air at door to trailer	2/8/2023	1135	<35	
stairs to trailer door	2/8/2023	1140	<35	
Father's shoes	2/8/2023	1140	<35	
Welcome mat in trailer	2/8/2023	1145	325	Possible just indoor air mixed with outdoor air when door was first opened
Breathing zone in living room	2/8/2023	1150	5000	after door open for several minutes
Carpet near sofa in living room	2/8/2023	1150	600	
Above kitchen stove a few inches	2/8/2023	1155	3000	
Above kitchen sink a few inches	2/8/2023	1155	3000	
Site-built house front matt	2/8/2023	1205	16 to 20	Brother's house to the south of the trailer
Site-built front door	2/8/2023	1205	13	Brother's house to the south of the trailer
Outside air around the trailer	2/8/2023	1207	<15	several readings were collected slightly under the trailer and adjacent to the trailer around the outside
Inside trailer in living room	2/8/2023	1208	164	after door was open for 20 minutes
Front bedroom bed	2/8/2023	1209	150	
Front bedroom crib	2/8/2023	1210	140	
Cosmetic products shelf in front bedroom	2/8/2023	1211	650	Shelf is elevated. During assessment the Hg vapor was clearly stratified - high near the ceiling, low near the floor
Rear bedroom breathing zone	2/8/2023	1212	2500	
Rear bedroom carpet	2/8/2023	1213	300-600	
Rear bedroom near ceiling	2/8/2023	1214	5000	
Broom outside trailer by front door	2/8/2023	1215	<35	
Mop outside trailer by front door	2/8/2023	1215	400	
Inside smaller camp trailer	2/8/2023	1230	<60	Small camp trailer next to subject trailer where family planned to stay until other options are available
Screennig Values				
ACGIH TLV for 8 hr exposure period			25,000	ACGIH and US OSHA
ATSDR isolation of contamination from residents or evacuation of residents			10,000	Joint EPA/ATSDR National Mercury Cleanup Policy Workgroup, March 22, 2012, Table 1
ATSDR Acceptable level to allow personal beloningns to remain in owner's poss			3000 to 6000	Joint EPA/ATSDR National Mercury Cleanup Policy Workgroup, March 22, 2012, Table 1
ATSDR Acceptable level for normal occupancy for most sensitive persons			<1000	Joint EPA/ATSDR National Mercury Cleanup Policy Workgroup, March 22, 2012, Table 1
ODEQ Risk Based Concentration for indoor residential air			310	based on a 30 year exposure period
EPA Regional Screening Value for indoor residential air			310	based on a 30 year exposure period
Notes				
Hg vapor - Hg vapor analyzed using a model RA915+ Lumex, serial number 280, factory calibrated in May 2022				
ng/m3 - nanograms per cubic meter				
Vapor readings were collected in the trailer after occupants had likely been in and out of the trailer druing the morning hours. Results are likley higher after the trailer has beenclosed during the night time hours.				

Mercury incident

- Initial assessment readings were 3,000 ng/m3 in the 2nd bedroom, 2,000 ng/m3 at sink and stove, 1,422 ng/m3
- Readings were low until….child's rug 40,000 ng/m3
- Some clothing came in at 10,000 ng/m3
- Contractors set up a staging area at neighbors property for bagging and venting due to space constraints
- 24 bags of various items were contained for heating and venting of mercury vapors
- Continual assessment found the source of the mercury… **skin whitening cream**
- Jerome J505 read 261,790 ng/m3, Lumex maxed out and was unable to read beyond 50,000 ng/m3.
- Mother indicated she purchased the cream from a black/gray-market source
- No seals on face cream, 1 did not have a label
- Suspected tampering

Mercury incident

Mercury incident

Reading is: <u>119,100 ng/m^3</u> !!!

Mercury incident

Lessons Learned:

- Every case can vary, wealthy family vs underprivileged family.
- Staging areas should be heavily considered with respect to the affected people.
- Mindful of response vehicles in the area.
- Social pressure to have lighter skin.

RR diesel incident

- Split rail punctured locomotive fuel tank
- Roughly 1,300-1,500 gal. of diesel spilled
- Spill location under a major road
- Excavating a large amount of soil required a storage solution for contaminated soil
- Open area on rail yard as possible debris staging

RR diesel incident

RR diesel incident

RR diesel incident

- Excavation around the support beam for the overpass
- Large amount of soil finally moved to landfill (1,000 tons+)
- Luckily, no exceedances detected near debris pile

RR diesel incident

Lessons Learned:

- Pay attention to storage locations and proximity to residences
- Spill near critical infrastructure increases the technical need and response tactics and time for recovery
- Expedient permit acquisition?
- Spill in the shade if it's the summer!!!

Renewable diesel incident

- Tug and barge impacted pipeline at a facility on the Columbia River
- Pipeline was “empty” since no transfer was occurring at time of impact
- Block valves present prevented almost 25,000 gal. from spilling in the water.
- Each section was cleared carefully, but residual amount still released into the water after a cut.

Renewable diesel incident

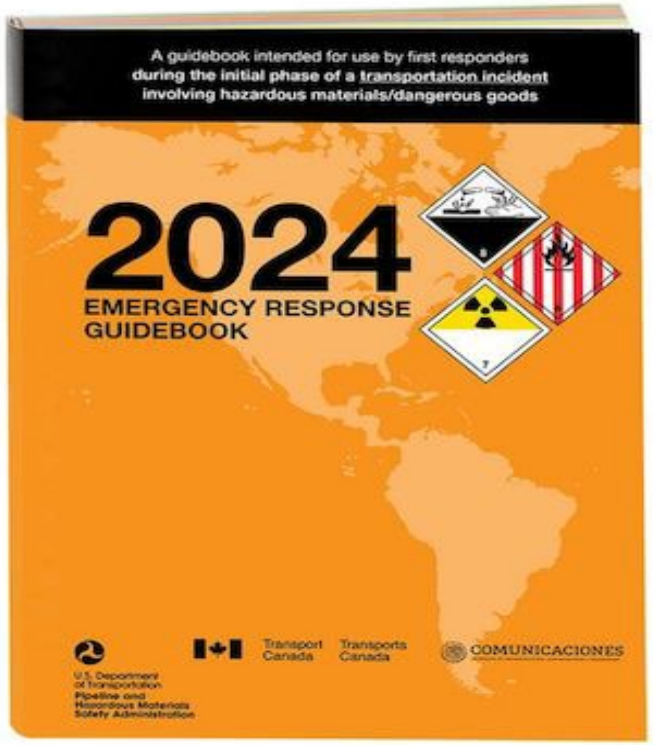
Renewable diesel incident

- Pipeline bent, but remained intact
- Drill and exercise program proved effective in a coordinated and rapid response
- Volume of product travelling by rail may now impact other communities as product gets re-routed
- Joint state response due to location – MOU continues to be exercised and helpful between WA and OR

Renewable diesel incident

Lessons Learned:

- Valves in pipeline prevented a major spill from impacting Columbia River
- Even if pipeline is “empty”, anticipate there is the potential for residual product to spill
- Be aware of inadvertent discovery and have a plan in place “just in case”… reconstruction will take extra time

Conclusion

- Spill response is a moving target
- Messaging is key
- EJ factors are important to consider and should be a factor in all decision making
- Prepare for as many contingencies as possible
- Practice and learn and build relationships
- No spill/ incident goes as planned