



# Myco Remediation





# Definition

**Allying with living organisms and systems to detoxify, heal, and regenerate contaminated environments by binding, extracting, and/or transforming contaminants.**

- Microbial Remediation (bacteria)
- Phytoremediation (plants)
- Mycoremediation (fungi)





# Contaminants



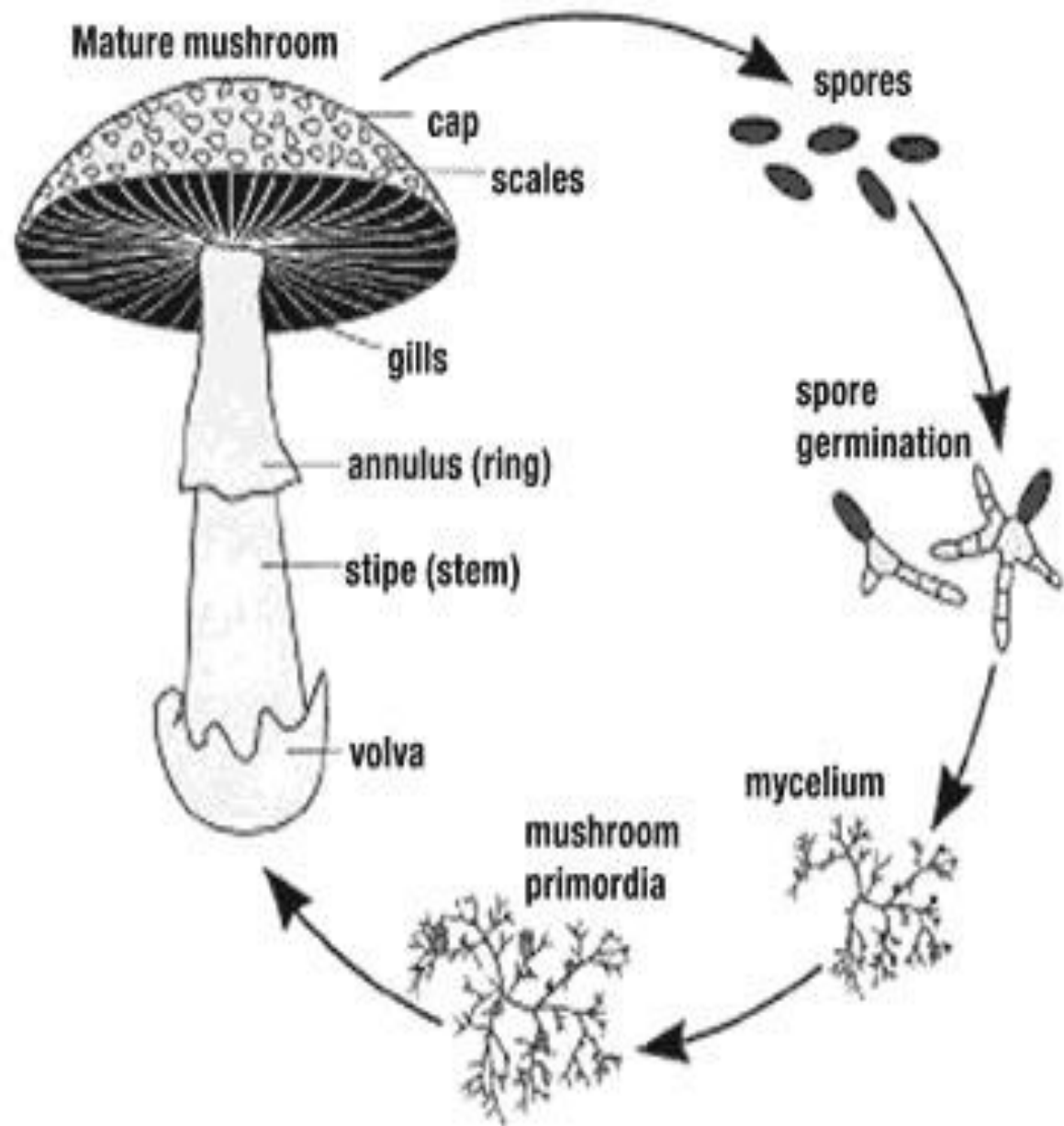


# Why talk about contaminants?



- Figure out what may be present on our sites!
- Know what to ask for when we do soil or water testing.
- Different contaminants react differently in the environment – important to know this when assessing risk and applying your different bioremediation tools!







# Mycoremediation Allies

**Shaggy Mane:** Arsenic, cadmium, and mercury

**Elm Oyster:** Dioxins, wood preservatives

**Phoenix Oyster:** TNT, cadmium, mercury, copper

**Pearl Oyster:** PCB's, PAH's, cadmium, mercury, dioxins

**Shitake:** PAH's, PCB's, PCP's

**Turkey Tail:** PAH's, TNT, organophosphates, mercury

**Button Mushrooms:** Cadmium

**King Stropharia:** E-coli and other biological contaminants





A large stack of weathered railway ties is piled up in a wooded area. The ties are dark brown and show signs of decay and discoloration. The background consists of bare trees and a light sky, suggesting a late autumn or winter setting. The text "Mycoremediation of Railway Ties" is overlaid in white on a semi-transparent dark grey background.

# Mycoremediation of Railway Ties



# Skeena Creosote Mycoremediation Pilot Project



Gourmet Mushrooms  
and  
Mycology





# Problem: Creosote Contamination on Gitksan Territory

## Contaminants in Rail ties

- Heavy Metals
- Dioxin
- PAHs
- PCBs
- High pH

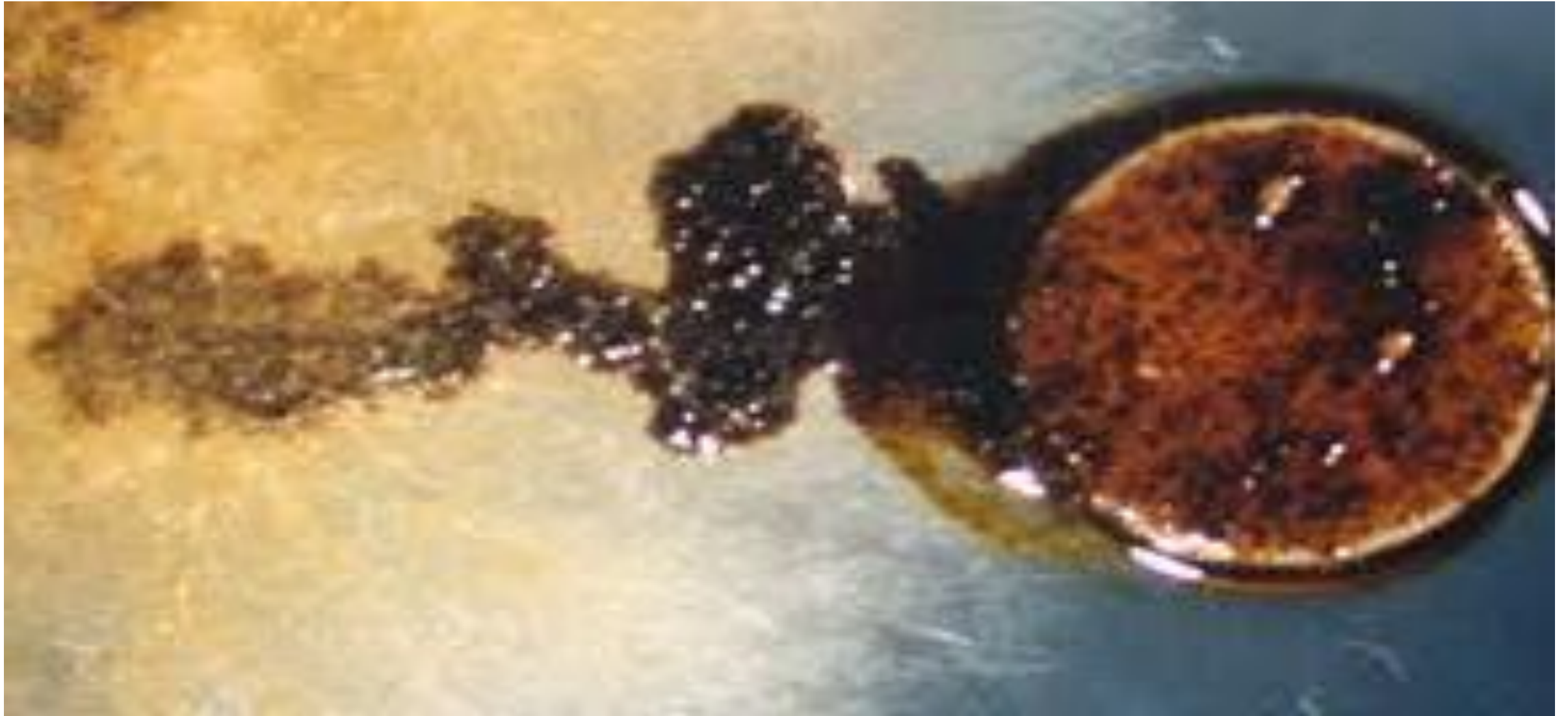
## Risks in the Environment

- Soil contamination
- Water contamination
- Wildlife
- Wildfire




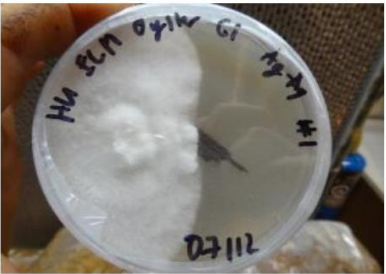
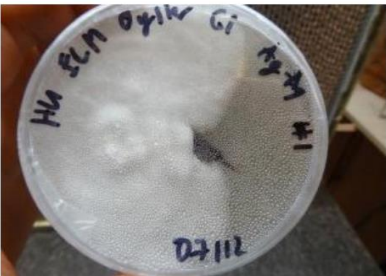
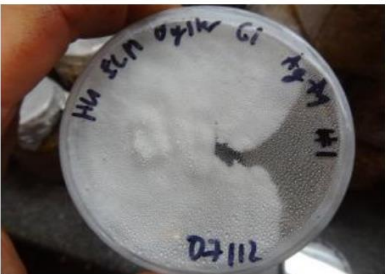


# Training Mycelium





# Training Mycelium: Creosote

Date \ Species	Elm Oyster #1
July 15	
July 18	
July 21	
July 23	

Date \ Species	Chicken of the Woods #1
July 15	
July 18	
July 21	
July 23	

	Artist Conk
July 21	
July 23	
July 25	
July 27	



# Next Steps: In Field Instillation

Using fungi species trained to break down creosote, do field inoculation!

- Bulk out mushroom spawn!!!

Explore different options for creating Creosote Substrate/"Opening up the Rail Ties" for mycodegradation, such as:

- Option 1: In contained area, chipping or cutting railroad ties into smaller chunks for increased surface area. Add additional substrate to this mix and inoculate with mushroom spawn. Cover and keep hydrated.
- Option 2: Take individual ties and cut wedges into them. Pack wedge cuts with mushroom spawn. In a contained area, put woodchips/substrate as base layer, and layer rail ties on top with more substrate and lots of mushroom spawn. Cover and keep hydrated.
- Explore drenching rail ties in liquid mushroom culture
- Explore using mycelliated jute wraps and/or girdling with mycelliated jute rope.

**NOTE: Containment is important, as is proper fencing and coverage to keep wildlife from foraging in pile!**

