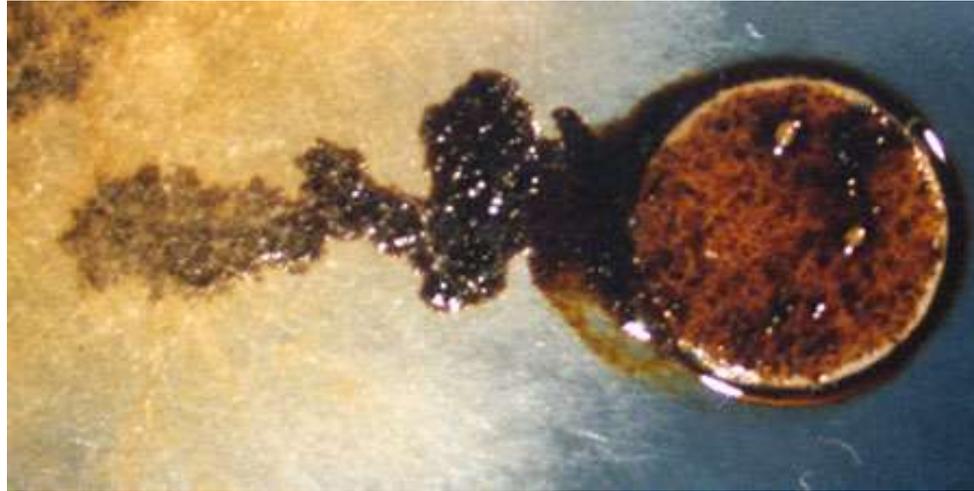


Mycoremediation



The use of fungi to degrade or remove toxins from the environment

“Humans are adept at inventing toxins and equally inept at eliminating them” (Stamets – Mycelium Running Pg.82)



- Fungi are adept as molecular disassemblers breaking down long-chained toxins into simpler, less toxic chemicals.
- Certain fungus secrete enzymes which digest lignin and cellulose – the main structural elements of wood – these enzymes also break down a wide range of toxins.
- Some mushrooms are experts are breaking down hydro-carbon bonds – they are designed to break down natures most resistant materials.
- Many bonds that hold plant life together are similar to bonds found in petroleum products.

[Stamets Video](#)

The Multi Kingdom Approach

- Using fungi first in bio remediation allows other players in the biological community to participate
- The introduction of a single fungus into a nearly lifeless landscape triggers a cascade of activity by other organisms.
- Synergy between at least 4 kingdoms – fungus, plant, bacterium, and animal – denatures toxins into derivatives useful to myriad species and fatal to few.



Application

- Reference Mycelium Running pg. 92 – Grid of toxins and effective fungal species
- Mix in with soil – density dependent on supply of spawn available and scale of contamination.
- Mulch with woodchip with apporx $\frac{1}{4}$ made up of inoculated saw dust adding layer of cardboard on top. This will encourage the ‘Multi Kingdom’ once the mycelium begins to break down the nutrients in the woodchip it will encourage a host of other organisms to help steer the habitat on a path of self healing.



- Studies have shown that spawn which has been exposed to microbial attacks and has therefore become more virulent can be a lot more effective at dealing with toxins. For this reason pure culture spawn is not as effective for remediation.
- This has significant consequences as spawn which has been previously used for fruiting mushrooms or is contaminated with bacteria which will inhibit fruiting, can be used very successfully for remediation.

Sources

<http://www.annforfungi.co.uk/>

Ann Miller - Scotland

www.hungryfungi.co.uk

Leeds based project - Taking orders for spawn now, will be ready in March.

Don't forget to read Mycelium Running – Paul Stamets. Also search on line for TED talks including 'How Mushrooms can save the world'

