Preventing and Controlling Fires at Compost and Mulch Sites

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The first step in preventing fires at compost and mulch sites is...

Be legit!
These are legitimate operations.

- Active
- Product sales
- Managed
These are illegal dumps.
Four Causes of Fires:

- **Hot Load** *(Someone brought the fire to you.)*
- **Spontaneous Combustion** *(We are working too hard!)*
- **Equipment** *(Hot engines, etc.)*
- **Other**

Cigarette
Lightning
Arson
??
A word about spontaneous combustion

• Microorganisms make compost for us.
• When they are working hard, they get HOT!
• Manage them well to keep them happy.
• If they get too hot, they die. But they may also ignite when oxygen hits them.
Let’s prevent a compost fire.
Site Layout

Make your site large enough for:

- Small piles
- Aisles
- Access
- Soil Stockpiles
- Isolate Equipment
- Isolate the Public
Temperature Change = Heat Generation – Heat Loss

Smaller → more heat loss\(^*\) → lower temps

Larger → less heat loss\(^*\) → higher temps

\(^*\)heat loss PER size unit (i.e. PER heat generated)
So...how big?

- About 2 Calvins seems to be high enough.

(This is Calvin.)
Plan for Safety

- Aisles for Access and Circulation
- Limit Height
- Immaculate Housekeeping
First things first...

- Fire extinguishers on every piece of equipment and other locations
- Fire extinguishers inspected and operational
- Clean soil (or other material) available and close
- Water available if possible
- Detailed log book documenting ongoing conditions to spot trends – cause & effect
Operation – Think Prevention

- Clean Feedstocks - NOT Trash
- Clean Site - NOT Dusty, Dirty, Weedy
This one was mulch for erosion control.
Honestly...
Taking Temperatures is Easy and Important
The Magic Numbers

- Piles less than 12 feet high
- Avoid 30% moisture
Ways to Cool Off

- Keep the moisture up and consistent.
- Turn, turn, turn...
- Or move, move, move...
Moist $\rightarrow$ continuous heat loss* $\rightarrow$ lower temps

Dry $\rightarrow$ little heat loss* $\rightarrow$ higher temps

* Evaporation = much heat loss
- Monitor for temperature and smoke.

- Even brush piles might need to be turned to cool off a bit.
Reference: Tim Richard, Cornell Cooperative Extension Operator’s Fact Sheet #5 of 10
Did you know?

Turning is more for cooling and drying than oxygen!
What might the operator do?

- Move equipment out of the way.
- Isolate the burning material by carefully pulling other material away.
- Smother with soil or even mulch.
- Spread material out.
- Water
Water on top can make a nice crust...

...just like a blanket!
Water evenly, all the way through the pile.
How many things are going wrong here?
What would be better?

- Move combustible materials and equipment away.
- Carefully remove material that is not smoldering or burning if you can.
- Try to spread the material out if you can and smother it.
- THEN water, mostly to prevent fire from spreading.
Training

- Train yourself.
- Train your staff.
- Train your visitors and customers.
- Train the public.
- Train your firefighters!
Training

- Inspect every piece of equipment.
- Inspect its surroundings.
- Keep things clean.
- Fire extinguishers – location, use, maintenance
- No Smoking!
- Signage
What should go in that fire box?

- Phone numbers
- Cell phone/radio and batteries
- Keys to all equipment
- Keys to all gates
- First Aid Kit
- Tools?
- Site layout?
Know Your Fire Marshal

Make sure they understand:

- Your site
- Your Operation
- Mulch and Compost Fires
- Isolation and Smothering with Soil
- Water may not be the answer.
Know your capabilities.

- What can your staff and equipment do to help isolate or smother the fire?
- When do you need to back out?
- Who has authority?
**Question:** When a pile fire develops, and the Fire Department is called and arrives on the scene, who is in charge?

**Answer:** The law says the Fire Department is in charge of dealing with fires.
Why does it matter?
Why does it matter?
Thank you!

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