



Air Pollution Control District  
San Luis Obispo County



# Air Curtain Incinerators & Carbonizer Use, Benefits, and Permitting

South Central Coast Basinwide Control Council  
24 Mar 2022

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# OUTLINE

- Rationale for Industrial Scale Clean Burning Devices
- Describe and Compare/Contrast ACIs & Carbonizers
  - Biochar description & benefits
- ACI & Carbonizer Permitting
  - CAPCOA Reference Materials for Air Districts
- Conservation/Kiln Burn Emission Test Proposal
  - Update if time permits

# Pacific Southwest Research Station

Pacific Southwest  
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800 Buchanan Street  
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## Research Topics Tree Mortality

### Tree Mortality in California

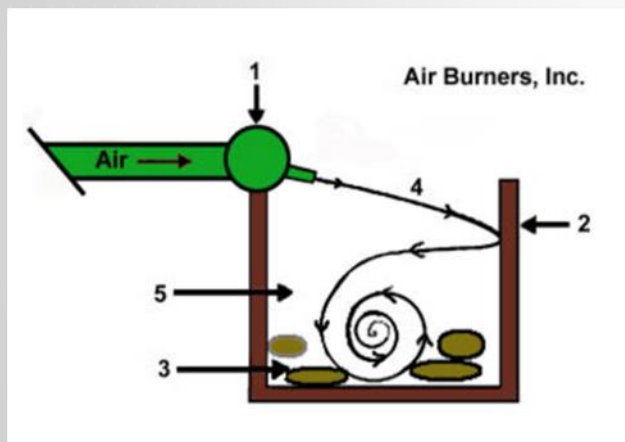
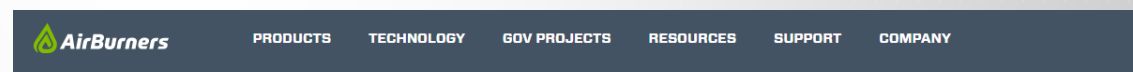
Since 2010, an estimated 129 million trees have died in California's national forests due to conditions caused by climate change, unprecedented drought, bark beetle infestation and high tree densities. Most visible and immediately concerning are the high number of hazard trees in and around communities and campgrounds and along roads, trails and power lines.



Shadow of the Giants National Recreation Trail: Fire then 100mph winds. Apr 2021



# AIR CURTAIN INCINERATORS



## FireBox



### FireBox 100 Series

We offer two choices in the 100 series, the S116 and S119. The 100 series machines are designed to fit into high cube shipping containers to ease transport around the world. These machines arrive fully assembled and tested, ready for immediate operation.



### FireBox 200 Series

We offer two choices in the 200 series, the S220 and S223. They are the largest machines we can build for over-the-road travel without oversize load permits. They are shipped overseas on flat racks. These machines arrive fully assembled and tested, ready for immediate operation.



### FireBox 300 Series

We offer two choices in the 300 series, the S327 and S330. They are the largest machines we can build to be shipped from the factory fully assembled. They are shipped overseas on flat racks. These machines will require over-size load permits to travel on most highways. They arrive fully assembled and tested, ready for immediate operation.

# CARBONIZER





## ACI

Mobility: Skid  
Engine (hp): 49/49/75  
Feedstock: Wood = waste  
ThroughPut: 4/8/12 tons/hr  
Biproduct: Ash  
Criteria Pol: ↓ PM<sub>2.5</sub>  
Climate: ↓ Black carbon  
↑ CO<sub>2</sub>

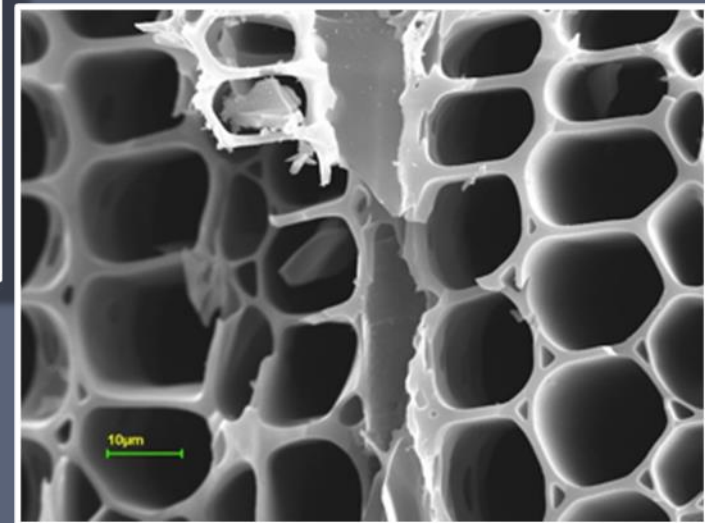
## CARBONIZER

Track mounted  
148  
Wood = process ingredient  
15 – 20 tons/hr (claimed)  
Biochar – Stable, sequestered carbon  
↓ PM<sub>2.5</sub>  
↓ Black carbon  
↓ CO<sub>2</sub>: Saves 10-15% of feedstock's carbon

# What is Biochar?



Biochar is highly porous and adsorptive. It incubates life in soil like a coral reef does in the ocean. It looks like a sponge under a microscope, and is a condo for soil nutrients & microorganisms.



One gram can have 300 square meters of surface area, depending on how it is processed, and can hold many times its own weight in water and dissolved nutrients.

# Biochar Benefits

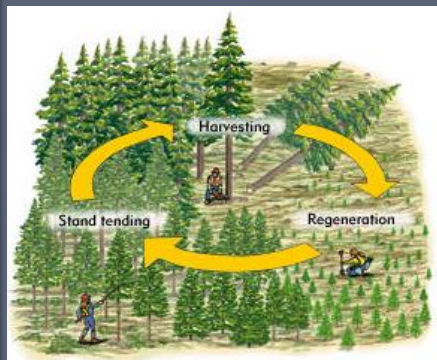
Carbon Drawdown: Stable for centuries = Natural climate solution (IPCC, Nat. Academy of Sci.), SB 27

Carbon Offset for CEQA/CAPs?: 2021 VERRA & CAR developing voluntary offset protocols for biochar

Useful in Crop/Silviculture & Animal Agriculture

- Reduce  $\text{N}_2\text{O}$  emissions from 50% to 80% when used in conventional agriculture
- Historic biochar amended Amazon soils:  $\uparrow$  crop production & soil water holding capacity
- Help restore/revitalize degraded forest soils & facilitate successful reforestation
- Added to animal feed:  $\uparrow$  poultry digestion & health;  $\downarrow$  cattle methane emissions

Other Uses: Renewable source for making activated C; Pollution remediation





# AIR PERMITTING SUMMARY

## ▶ Stationary Source Permitting Programs

### ▶ Local District Permits

- ▶ Air Districts are authorized by State law (H&S Code §40000 et seq.) for the “Primary responsibility of control of air pollution”
- ▶ Authority to Construct (ATC) “preconstruction permit” followed by annual Permit to Operate
- ▶ New Source Review (NSR) Permitting Program (Review of BACT & Emission Offsets)

### ▶ Federal (Title V) Permits – 40 CFR Part 70

- ▶ Amendments to Title V of the 1990 Clean Air Act
- ▶ Usually reserved for “Major” sources of air pollution
- ▶ Title V permit can be triggered by specific New Source Performance Standard (NSPS) applicability
- ▶ Administrative permitting process completed “post-construction”



# NEW SOURCE PERFORMANCE STANDARDS

- ▶ Authorized in Section 111 of Clean Air Act and codified in Title 40 CFR Subpart 60
- ▶ Subpart CCCC – Commercial and Industrial Solid Waste Incineration Units (CISWI)
- ▶ Subpart EEEE – Other Solid Waste Incineration Units (OSWI)
  - ▶ For “very small municipal waste combustion units and institutional waste incineration units”
  - ▶ ACI’s are included in rule applicability
  - ▶ Applicable to most ACIs used in forest fuel reduction efforts
- ▶ All units that fall under these NSPSs are currently subject to Title V permitting requirements



# SUBPART EEEE (OSWI) PROPOSED CHANGES

- ▶ EPA issued [Federal Register Notice 54187](#) (31 August 2020)
  - ▶ ACI's exclusively combusting 100% wood waste, clean lumber and/or yard waste, with certain limitations, are not considered solid waste incineration units under CAA Section 129(g)(1)
  - ▶ These ACIs do not need a Title V permit if:
    - ▶ Operation is below Title V potential to emit (PTE) thresholds
- AND
- ▶ Unit is located at institutional source and only combusts materials generated at the source; or
  - ▶ Unit is limited to < 35 tons per day of combusted material generated from public, residential, institutional, commercial or other outside sectors.
- ▶ Initial Court-ordered deadline for final OSWI rule 31 May 2021
- ▶ Court extended deadline for final OSWI rule extended to ~~31 Oct 2021~~

31 March 2024





# PERMITTING “PATHWAYS”

- ▶ District ATC permit is required for all scenarios – equipment is operated as a “stationary source”
- ▶ Local permitting applicability may vary from District to District
- ▶ Two distinct sources of emissions:
  - ▶ Air curtain incinerator combustion emissions
  - ▶ Diesel internal combustion engine emissions (if  $\geq 50$  bhp)
- ▶ Title V permitting determined by federal regulations, but delegated to CA Air Districts for implementation



# PERMITTING “PATHWAYS” – EXAMPLE #1



- ▶ 100% wood waste, yard waste, and/or clean lumber
- ▶ Operating at single location for an indefinite amount of time
- ▶ Material brought in from offsite sources
- ▶ Propose to dispose of less than 35 tons per day of material
- ▶ Daily processing limit must be federally enforceable (i.e. permit conditions)
- ▶ Annual facility emissions are less than Title V “Major” Source PTE thresholds

**Title V Permit IS NOT Required**

# PERMITTING “PATHWAYS” – EXAMPLE #2



- ▶ 100% wood waste, yard waste, and/or clean lumber
- ▶ Operating at single location for an indefinite amount of time
- ▶ Material brought in from offsite sources
- ▶ Propose to dispose of greater than 35 tons per day of material
- ▶ Annual facility emissions are less than Title V “Major” Source PTE thresholds

**Title V Permit IS Required**



# PERMITTING “PATHWAYS” – EXAMPLE #3

- ▶ 100% wood waste, yard waste, and/or clean lumber
- ▶ Operating exclusively at institutional facilities
- ▶ This may include temporary operation at multiple locations (i.e. across federal lands and forests or state parks)
- ▶ Propose to dispose of any amount of material on a daily basis
- ▶ Annual facility emissions are less than Title V “Major” Source PTE thresholds



**Title V Permit IS NOT Required**

# PERMITTING “PATHWAYS” – EXAMPLE #4

- ▶ 100% wood waste, yard waste, and/or clean lumber
- ▶ Operating at any type of facility or location



- ▶ Annual facility emissions are greater than Title V “Major” Source PTE thresholds

**Title V Permit IS Required**

# HOW DOES THIS APPLY TO CARBONIZER?

- ▶ Manufacturer applied with EPA's OLEM for Title V applicability determination for carbonizer
  - ▶ If: Use clean wood for biochar production
  - ▶ Then: Wood is "process ingredient," not solid waste
  - ▶ Therefore: Not subject to NSPS requirements



- ▶ Title V can still be triggered by exceeding annual PTE thresholds
- ▶ Air District permitting is still required
- ▶ Emission factors pending



# Thank you – Questions?



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