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**SUBJECT: PUBLIC COMMENTS**  
**Docket ID No. OAR – 2003 - 0156**

**REFERENCE: 40 CFR Part 60**  
**[OAR – 2003 0156; FRL – 7845 – 4]**  
**RIN 2060 – AG31**

**Standards of Performance for New  
Stationary Sources and Emission  
Guidelines for Existing Sources: Other Solid Waste Incineration Units**

**Agency: Environmental Protection Agency (EPA).**  
**Action: Proposed Rules.**

EPA Staff:

We are submitting these comments, and would be grateful for your review, on suggested changes to the above referenced proposed rules. Our comments address only those provisions of the proposed rules that are related to the use of Air Curtain Incinerators (ACI's).

As requested in the *Federal Register* notice for the proposed rules, we have organized our comments by the specific rule provisions to which they apply. In general, our comments are provided in the order in which the affected provisions occur in the proposed rules. When other rule provisions, or comments in the Background Section presented before the rule language, have a bearing on how the provision being discussed may be interpreted, those other provisions or background statements are discussed at that point in our comments.

There are no comments or other information provided in this document that are Confidential Business Material (CBI). The proposed rules were published in the *Federal Register* / Vol. 69, No. 236 / Thursday, December 9, 2004.

## INTRODUCTION

Our purpose in submitting these comments is to:

- 1) Develop a better understanding of Air Curtain Technology based machines or what are referred to as “Air Curtain Incinerators” (ACI) in the EPA text.
- 2) Identify some seemingly inconsistent rules and possibly some inaccuracies in 40 CFR, and
- 3) Hopefully open the door to developing a separate category covering air curtain machines.

Over thirty years ago our company developed and maintained some of the first US Patents on air curtain machines. Those first machines were the “trench burners” used primarily in land clearing operations. We later developed and patented the “firebox” self contained design. We are the largest and oldest company engaged in the design, research and development of air curtain burners.

Probably the most difficult issue facing state air quality regulators as they deal with how to permit and use our machines, is the EPA classification or grouping of our machines as “incinerators.” While we understand how we fell into the category of incinerators, we would argue that our machines should not be classified as incinerators and by no technical definition do we fit into that category. One buys an incinerator to burn waste, the incinerating heat typically being generated by a hydrocarbon based fuel. Our machines do not require a supplemental fuel. The sole purpose of their design is to reduce emissions created as a result of open burning. Our machines are more accurately described as a pollution control device for open burning. Our machines are used to control emissions from the burning of waste. We have certified test data spanning many years and developed by various governmental agencies both in the US and outside the US that support our performance. As an example the USDA Forest Service performed emissions testing last year on our firebox model S217 burning clean wood waste gathered from forest fuels reduction efforts. After one week of testing the average particulate matter release (PM 2.5) was measured at 1.1 lbs/ton of material burned, as compared to the USDAFS standard for open burning of 36.9 lbs/ton burned.

Our goal as a company is to provide another tool in the effort to improve air quality. We do not advocate increasing burning across the United States, just the opposite. Our machines are an environmentally friendly alternative to open burning. Small forest communities in our Western States are using our machines to reduce the enormous mass of green waste generated as they clear forest litter to protect their homes from wildfires. We hope our machines can be used to move further away from open burning. We hope our machines can be used to help reduce clean wood waste and green waste going into our valuable and dwindling landfill space. We are also hopeful that by using our machines, some American businesses and agricultural entities can reduce their waste handling cost, better serving the environment and helping them to remain competitive in the face of ever increasing foreign competition.

It would seem obvious that based on the available test data and even EPA’s own PM numbers for ACI’s (although they are based on older technology and do not include the fireboxes) that a state regulator would always want air curtain technology used over open burning. But it is not the case, due to the confusion surrounding the identification as “incinerators” there are many situations where a person can open burn all day with no permitting effort but if they want to use a pollution control device like air curtain technology they need a permit, possibly even a Title V permit.

We would further advocate that as regulators look at using the air curtain burners as a tool in reducing PM generated from open burning that there should be a distinction between machines that are “portable” and machines that are “stationary.” In the states that are adopting this approach, the defining difference is that a

“portable” machine is brought to a site and used on waste material generated on that site. Whereas a “stationary” unit the waste materials are transported to the machine from off site. We fully support additional scrutiny and certification for stationary units but we believe the state regulators know their areas best and they should have the option to apply Title V type requirements or not. We would suggest and would be supported by most state regulators who have experience with air curtain machines that “portable” applications should be a simple local permit, certainly no more complicated than an open burn permit.

For state regulators that have asked or are interested, we have suggested a three zone approach to employing the air curtain machines;

- Zone 1** No open burning is allowed and air curtain machines would be allowed only with special exceptions (i.e. emergencies, hurricanes, ice storms, forest fuels reduction, etc.)
- Zone 2** This would be an area where moving away from open burning altogether causes some hardships. As is appropriate and determined by the local air quality staff, you move out of open burning but allow air curtain machines.
- Zone 3** This is an area where it will be a long time before you can move out of open burning due to economic impacts, agricultural concerns, etc. Here you offer an economic incentive to use air curtain machines, (i.e. extended burning time with the machines, 6 hours for open burning, 12 to 24 hours for air curtain machines).

We further advocate a state controlled manufacturer’s certification. The air curtain is a control technology and it has to be designed and applied correctly to reduce PM. Unknowing or untrained entities may think it is nothing more than air blown on a fire. While that might get you a slightly cleaner burn, it will not get you the reduced level of emission results we have demonstrated over the years. The purpose of the air curtain is to trap a majority of the unburned particles, cause them to reside momentarily in the hottest part of the fire, just under the air curtain. This residence time allows the particles to be further reduced. The control comes in balancing the mass flow and velocity of the air curtain with the potential mass flow and velocity of the burning material. After effecting the “curtain” the air continues within the trench or firebox and creates a light turbulence that allows oxygen to better mix causing a more complete combustion.

As we all look for a cleaner environment it seems a shame to let air curtain technology which has demonstrated its usefulness, its economic benefits and its capability in numerous everyday and emergency situations around the world, languish for clarity of rule. Therefore we are requesting the EPA to create a separate category for air curtain machines. The goal of this new category would be to better clarify for state regulators where air curtain technology can and can not be used and to further emphasize air curtain technology as a tool to be employed in the effort to reduce emissions. We would appreciate and support any opportunity to meet with you regarding air curtain technology. As we have done in many states trying to grapple with regulations, we can share our experiences and data and we can make equipment and people available for testing.

The balance of pages contains our comments regarding the current proposed rule changes. These comments were developed by our engineers working with our chief environmental consultant Mr. Steve Smallwood. Mr. Smallwood is the former Director of Air Quality for the State of Florida and is very experienced in the application of air curtain technology.

## COMMENTS

### **Subpart EEEE – Standards of Performance for Other Solid Waste Incineration Units For which Construction is Commenced After December 9, 2004, or for Which Modification or Reconstruction is Commenced on or After [Date 6 months after Date final rule is Published in the Federal Register].**

#### **A. Applicability.**

##### **§ 60.2885 Does this subpart apply to my incineration unit?**

Yes, if you incinerator unit meets all of the requirements specified in paragraphs (a) through (c) of this section.

(c) Your incinerator unit is not excluded under § 60.2887.

##### **§ 60.2887 What combustion units are excluded from this subpart?**

(d) *Commercial and industrial solid waste incineration units.* Your unit is excluded if it is regulated under subparts CCCC or DDDD of this part and is required to meet the emission limitations established in those subparts.

**Comment:** Therefore, air curtain incinerator (ACIs) that are subject to the current NSPS CISWI rules that apply to ACIs are not subject to these proposed rules, if they were adopted as proposed.

#### **B. Applicability.**

##### **§ 60.2888 Are air curtain incinerators regulated under this part?**

(a) Air curtain incinerators that burn less than 35 tons per day of municipal solid waste or ACIs located at institutional facilities burning any amount of institutional waste generated at that facility are subject to all of the requirements of this part, including the emission limitations specified in Table 1 of this subpart.

**Comment:** Under Background Material, **IV. Rationale for the Proposed Rule**, 10. Air Curtain Incinerators, the following statement is made: “Air curtain incinerators that burn institutional or municipal waste, however, would have to meet all requirements of the proposed rule. Since air pollution control devices are unavailable for air curtain incinerators, this has the net effect of precluding the use of air curtain incinerators for burning municipal solid waste or institutional waste [FR page 71482]”.

This statement raises two issues: one about the nature of the performance standard you are proposing; and one about the nature of air curtain incinerators you are assuming.

### **The Standard.**

We do not know, if an air curtain incinerator can meet the CAA Section 129 suite of mass emission standards. If you are certain that it can not be done, it would be much clearer and simpler for every one affected, if you would just say “except as may be otherwise provided in the exemption provisions of this rule, air curtain incinerators that have a burning capacity of 35 tons per day or less shall not be used to burn municipal solid waste; and, air curtain incinerators shall not be used to burn any amount of institutional solid waste.” Note that in the proceeding section of the Rationale, (9. Rural Institutional Waste Incinerators) and for the following section (11. Incinerators and Air Curtain Incinerators in Isolated Areas in Alaska), the proposed rules would allow the use of air curtain incinerators for this type of waste in Alaska because of the special circumstances cited in the text, and in the other case, exempt combustion devices that probably are not any more effective than an ACI in burning the rural institutional solid waste.

The point is not that you should not allow the proposed exemptions, but rather, why you should not also grant an exemption for the item 10 situation. If burning this type and amount of solid waste in isolated parts of Alaska and most rural areas in the other states are not going to cause an air quality problem, why prohibit it in the item 10 situations by invoking the Table 1 suite of mass emission standards, when you clearly have the authority to exempt these very small sources from them?

If you decide to keep the proposed suite of Table 1 standards, you should at least provide a way of determining by direct measurement, if the affected unit can or can not meet the Table 1 suite of emissions limits. The problem with doing that is not the lack of EPA emissions test methods that could be used. The problem is the lack of an agreed upon method of where and how to position the sampling probes just above the air curtain to collect a representative sample of the emissions that get through the air curtain...

Most of the emissions leave the above ground furnace box or the pit of a trench burner from the top side of the furnace or pit wall opposite the air curtain manifold. As you move back toward the manifold, less and less pollutants get through the air curtain. To collect a representative sample the top of the furnace or pit needs to be divided into a number of equal rectangular areas (for example, four across by five lengthwise) and collect a sample from the center of each rectangular area.

We would need agreement on how to position the sampling probe. For example, for a source equipped with a stack, the test procedures call for a straight length of duct with a bend or obstruction in the stack no closer than one stack diameter downstream (up the stack) and stack diameters upstream (down the stack). Since that is not possible, one alternative is to place a moveable / relocateable short small diameter over each sampling point a short distance (~1 ft) above the top of the air curtain, and draw the emissions sample(s) from inside the top of the moveable / relocateable sampling tube.

Fountainhead Engineering, Ltd. has conducted an emissions test on air curtain incinerator (air burners) using this sample collection approach with standard EPA test equipment and methods, except for the way the sample is extracted (above the air curtain, instead of in a stack, since there is no stack).

Since this type of testing is extreme and unnecessary we would suggest a better alternative would be for each state to set its criteria for manufacturers testing.

**Air Curtain Incinerator.** The emission factors for air curtain incinerators in the EPA Compilation of Air Pollutant Emission Factors, AP-42 are based on the older design of trench burners. The newer trench burners are more efficient. The trench burners were the “original” design. The above ground fireboxes were first used about fifteen years ago. The main advantage is no dependency on soil conditions.

In Florida, if you want to use an ACI at a landfill for any length of time, or at any other location for longer than six months, you have to get a stationary source permit. Air burners that require a stationary source permit have to comply with the EPA NSPS 40 CFR 60 - Standards of Performance for Commercial and Industrial Solid Waste Incineration (CISWI) Units. Most of the new stationary units in Florida are the above-ground, refractory-lined ACI's. If you are using either a trench burner or firebox in a temporary application such as land clearing, then you are only required to obtain a burn permit similar to open burning.

The Fountainhead Engineering emissions tests references above were conducted on the newer design above-ground, refractory-lined ACIs. We have met some people who think an air burner is just a trench or a large burning barrel with an air blower on top of it to blow on the fire in the box or the pit, the way you might blow on the litter in your fire place to start an open fire. We suspect you know that a properly designed and operated air burner is a little more complex than that.

The “air curtain” is generated by a blower (either diesel or electric powered) that forces ambient air through a specially designed manifold. The invisible relatively thin sheet of high velocity air (the air curtain) traps most of the combustion products in the Firebox (or Pit) under the “air curtain” as it is blown across the inside top and slightly down into the furnace box or pit.

When properly operated, an Air Burners LLC above ground refractory lined burner reduces the volume of the wood waste material burned by 98%. The remaining ash is not-toxic, and recommended for use as soil supplement.

Compared to PM emissions from the open burning of land clearing debris (~ 21 lbs PM / ton of land clearing material burned), a properly operated Air Burners LLC above ground refractory lined air burner reduces the particular matter (PM) emissions, from the same amount of land clearing debris, being burned in the burner by ~90% (2 lbs PM / ton land clearing debris burned); for unpainted, untreated lumber (pallets), the PM emissions from burning waste lumber in the burner is significantly less than the PM emission from burning the same amount of land clearing debris in the burner (<0.5 lbs PM / ton of untreated wooden pallets burned).

The trench burners don't always perform quite as well as the above ground firebox units, because of the inability to construct a suitable trench in some types of soil. The EPA emissions factor for PM emissions from trench burners is 13 lbs / ton of woodwaste burned. The newer trench burners have a better designed manifold that produces a better air curtain than the older units. While the trench suitability is still a consideration the newer machines incorporate some technological advantages that allow them to perform significantly better than in the past.

An important technical point to keep in mind about air curtain incinerators is that they don't use or need add-on emissions control devices, since the air curtain is an emission control device. It traps air pollutants below it and generates a recirculating high temperature, turbulent air flow in the furnace (firebox) which allows higher combustion temperatures to be maintained. The trapped particles are

further reduced in the high temperature “re-burn” area just below the air curtain. The air curtain controls the combustion process to achieve the highly efficient combustion that significantly reduces the amount of air pollutants emitted from the wood waste being burned.

An ACI is an efficient and cost- effective air pollution control device for reducing the emissions from burning wood waste of many different types. In a recent cost benefit analysis performed for CARB, it was established that the aggregated cost to reduce PM is \$100/ton of PM reduced from the atmosphere utilizing an Air Curtain Burner from Air Burners LLC.

Another way the model certification program discussed above, could be used would be to apply it to the existing stationary source units (above ground & trench) to develop current emission factors for different designs of both types of air curtain incinerators (air curtain burner).

### **C. Title V Operating Permits**

#### **§ 60.2966 Am I required to apply for and obtain a title V operating permit for my unit?**

Yes, if you are subject to this subpart, you are required to apply for and obtain a title V operating permit unless you meet the relevant requirements for an exemption specified in § 60.2887.

#### **§ 60.2887 What combustion units are excluded from this subpart?**

*(d) Commercial and industrial solid waste incineration units.* Your unit is excluded if it is regulated under subparts CCCC or DDDD of this part and is required to meet the emission limitations established in those subparts.

**Comment:** There are sixteen categories of combustion units in the list of excluded combustion units. There are several provisions like this one in the proposed rule that on a quick reading lead the reader to think his unit is subject to some provision of the rule, when actually for most cases it is not.

A way of wording the above provision (60.2966) that would be easier to follow, would be:

*Yes. Unless your unit is one of the types of excluded units listed in § 60.2887. If not, you are required to apply for and obtain a title V operating permit.*

**D. Air Curtain Incinerators That Burn Only Wood Waste, Clean Lumber, and Yard Waste**

**§ 60.2974 Am I required to apply for and obtain a title V operating permit for my air curtain incinerator that burns only wood waste, clean lumber, and yard waste?**

Yes, if your air curtain is subject to this subpart, you are required to apply for and obtain a title V permit as specified in §§ 60.2966 and 60.2967.

**§ 60.2966 Am I required to apply for and obtain a title V operating permit for my unit?**

Yes, if you are subject to this subpart, you are required to apply for and obtain a title V operating permit unless you meet the relevant requirements for an exemption specified in § 60.2887.

**§ 60.2887 What combustion units are excluded from this subpart?**

(d) *Commercial and industrial solid waste incineration units.* Your unit is excluded if it is regulated under subparts CCCC or DDDD of this part and is required to meet the emission limitations established in those subparts.

**Comment:** All air curtain incinerators that are regulated under subparts CCCC or DDDD of this part are only allowed to burn wood waste, clean lumber, and yard waste. Therefore, none of those units are required to obtain a Title V permit pursuant to any provision in this proposed rule. If a separate classification for “Air Curtain Burner” were established, any confusion in regards to this matter would be eliminated.

**§ 60.2974** above needs to be re-written as follows. It is unnecessarily complex and appears to contain several writing errors.

**§ 60.2974 Am I required to apply for and obtain a title V operating permit for my air curtain incinerator that burns only wood waste, clean lumber, and yard waste?**

No.

**Subpart FFFF – Emissions Guidelines and Compliance Times for Other Solid Waste Incineration Units That Commenced Construction On or Before December 9, 2004**

**Comment:** The same Comments apply to the provisions of this Guideline that parallel the provisions of Subpart EEEE for which Comments were provided.

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We are grateful for your time and review. Should you have any questions on our comments, suggestions or proposed changes, please call, email, or write to me as is convenient for you. We look forward to your response and the opportunity to work closer with the staff at EPA. Thank you.

Sincerely,

*Electronically transmitted,  
Signature not available*

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