

TECHNICAL MEMORANDUM

October 1, 2005

Animal Carcass Burning in Firebox S-327 & S-220

(Disaster Recovery)

Page 1 of 3

This is a brief summary of the procedure for incinerating animal carcass using an Air Burners, LLC Series 300 or Series 200 air curtain burner. These machines are designed to be used as an environmentally friendly alternative to open burning of clean wood waste. Their purpose is to control particulate matter (smoke) generated from burning wood. This is accomplished by directing an "air curtain" across the top of the open firebox. This air curtain traps a majority of the smoke particles and causes them to re-burn in the extremely hot area just below the curtain and just above the burning wood waste. The temperatures in this area can exceed 2,000° F.

Because of this high temperature area the Air Burners machines have been utilized numerous times around the world for disaster clean-up where it was necessary to incinerate animal carcasses. Summarized below are some of the important points to consider when using an Air Burner in this application.

Wood Fuel

The "fuel" used to incinerate the carcasses is highly burnable wood waste. In order to be successful the operator will need a wood weight to carcass weight ratio of at least 1 to 1 (i.e. 10 tons of carcasses need 10 tons of wood waste).

The drier and more burnable the wood waste is, the hotter and cleaner the incineration operation will be.

Equipment

Trench Burner vs. Portable Firebox. We recommend using the 200 or 300 Series fireboxes. They are fully self-contained and they do not require any set up at site. The units are ready to load and start burning as soon as they are off the trailer. They are fully portable on a flat bed trailer. They perform better than our trench burners as the firebox is made of castable thermo ceramic and is not susceptible to erosion and other soil problems that the trench burners experience.

The trench burners will work fine if the trench is dug correctly. The trench burners may be preferred when you will only be on a site a short time. The set up time is usually about 1 to 2 hours including digging the trench. A good trench will only last for about one or two weeks maximum before erosion from loading and cleaning will drop its efficiency. To be effective a trench must be in clay type soil and have no water running into it from above or below ground.

Loading equipment. An excavator with a grapple works well if the carcasses are large and mostly intact. For smaller carcasses a wheeled loader with a rake is good. The addition of a hydraulically actuated "clam shell" is also good. Using a wheeled loader with a bucket is possible for small carcasses but one of the problems with a bucket is the potential for "scooping" up dirt when you pick up the carcass. Dirt smothers the fire and the more dirt that goes into the firebox the slower the operation will be.

Animal Carcass Burning in Firebox S-327 & S-220

(Disaster Recovery)

Operation

Site prep, start-up, and loading are basically the same procedures for wood burning as with carcass burning. See the Air Burners operating manuals for the appropriate equipment you are using. These manuals can be downloaded from the web at www.airburners.com.

Fuel Loading. Start the fire as per the Air Burners manual. The most important issue in preparing to burn carcasses is to insure you have a good hot fire base before you load any carcasses. This usually takes one to two hours of wood only burning. You are trying to insure the entire bottom of the trench or firebox is covered with at least two feet of burning hot material. If you load too soon the carcass may fall through to the dirt bottom and there will be no heat or fire to burn the carcass. It will eventually burn, but your overall throughput will suffer and visible smoke may increase.

Once you start loading carcasses, as described in the next paragraph, the process is to build layers. After each layer of carcasses load an equal amount of wood.

The most common mistake is to “rush the fire.” The throughput will start out slow and increase as the day goes on. If you rush the fire by adding carcasses and wood too fast then the overall temperature will drop, the smoke will increase and the throughput will go down significantly. Remember the wood is your fuel; be sure it is burning strong before you load more carcasses on it.

Carcass Loading. Using the appropriate loading machinery try to place the carcass in the middle of the firebox. The important thing to remember is that rapid incineration is all about surface area. If you place a cow carcass in the middle of the trench or firebox then the carcass will incinerate around the entire external area of the carcass. If you pile that same carcass up against the trench or firebox wall then the carcass will only incinerate from the exposed areas and the throughput will slow down.

Shut Down. Once you have finished loading the carcasses continue to add wood until the last load of carcasses are incinerated, usually about one hour. Then follow normal shut down procedure per the operating manual.

Ash Removal. In all of the cases where the residual ash has been tested after incineration operations using Air Burners machines the ash has been found to be sterile. For ash removal follow normal procedures per the operating manual. Dumping the ash or burying the ash is the decision of local authorities.

Animal Carcass Burning in Firebox S-327 & S-220

(Disaster Recovery)

Safety

Firebox

The firebox is the safest machine of the two types as the operations are conducted above ground. The unit has an open bottom, so it cannot be placed on flammable materials, such as dry grasses or peat moss. During operations, hot embers will fly from the open top. They usually fall very near to the machine, less than 100 feet. Follow the procedures outlined in the operating manuals.

Trench Burner

The trench burner has the same concerns for hot embers as the firebox. Additionally the trench is below ground and can be very dangerous. It should be well marked. One side will be protected by the machine manifold along the entire length of the trench and should be obvious. Loading is done from the side opposite the manifold, this side should be marked at the corners for visibility. Only personnel trained in the machines used should come within 300 feet of the entire operation. The trench must be secured and guarded at night to prevent any accident.

* * * * *