DOCKET NO. 70-133

STANDARD PROCEDURE

S. P. No. CR-17-G
Effective Aug. 1, 1959

INCINERATOR FOR COMBUSTIBLE WASTES CONTAMINATED WITH SOURCE AND SPECIAL NUCLEAR MATERIALS

General:

The Standard Procedure specifies the practice to be followed during operation of the incinerator used to burn combustible wastes contaminated with Source and Special Nuclear Materials. This practice is designed to provide safe operating conditions which will prevent the occurrence of accidental criticality due to the accumulation of an unsafe mass of U-235 in the incinerator, ashes or in the ancillary equipment such as ducts, blower, filter, etc. In addition, this practice outlines the procedure whereby contaminated wastes are separated to prevent mixing of recoverable amounts of materials having significantly different U-235 enrichment.

A. Incinerator Installations.

The incinerator installation is located within the restricted area. Details of the installation are contained in a drawing dated 12/17/58 - by Fleming and Pfitzenmaier Associates. The installation as shown on the referenced drawing has been modified by changing the elbow running between the blower and the exhaust stack to a T connection. The lower end of the T contains a drain pipe running into a 30-gallon drum to collect condensate or any rainwater entering the stack.

B. Materials to be Burned.

Combustible wastes in the form of paper, rags, cardboard, wood, plastics, etc. which are considered contaminated with source or special nuclear material are the only items to be burned in this incinerator.

C. Identification of Combustible Wastes.

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1. Wherever possible, combustible wastes are to be placed in containers identifying the wastes with a particular contract. This practice will insure separation of various materials. Where more than one U-235 enrichment level is associated with a particular contract, the wastes will be separated by enrichment levels.

   The wastes will be burned as separated and the ashes placed in identified containers. Combustible wastes from the general area which cannot be associated with a particular contract will be placed in the general waste containers. The ashes from these wastes will be prorated to the contracts in process at the time these wastes are generated.

D. Storage and Analysis of Ashes from Combustible Wastes.

1. The ash drawer in the incinerator is normally emptied after six loadings of the incinerator (approximately 6-8 bushels) when the

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wastes are all from one contract or one enrichment level. The drawer is also to be emptied whenever wastes from a different contract are burned.

2. As the ash drawer is removed from the incinerator, a sample vial (approx. 50 cc capacity) is loaded with random samples from the drawer.

3. The ashes are placed in a properly identified 30-gallon steel drum.

4. At the end of the month, the ash samples collected for each waste container are analyzed chemically for uranium content.

5. Using the analytical results and the net weight of the ashes in each container, the uranium content in each drum is calculated and recorded on the drum.

6. The permissible mass limit for 30-gallon drum waste containers is 100 grams of U-235.

NOTE: Experience to date with combustible wastes shows an average uranium content of less than 100 g. per 30-gallon drum containing approximately 50 lbs. of ashes.

E. Inspection of Dust Collection Equipment.

The following inspection operations are performed monthly to prevent the accumulation of nonsafe amounts of enriched uranium in the dust collection equipment.

1. The fly ash container is emptied monthly and the ashes placed with the other ashes from the contracts involved. Experience to date has shown a build up of approximately one pound of fly in this container per month with a uranium content of approximately 0.4%. Therefore, the monthly build up in this fly ash container will be approximately 2 grams.

2. The ducts leading from the incinerator to the filter are to be examined monthly for build up. Any excessive build up will be removed with a vacuum cleaner.

3. The filter is to be removed from its mounting and weighed monthly to determine the total dirt build up. This gain in weight will be recorded along with the static pressure measured across the filter before it is removed. This procedure will be followed until a curve is established which shows the relationship between increase in static pressure vs. the weight of the dirt build up on the filter. Periodic analysis of dust on the filter will be made to determine the uranium content after the curve of dirt build up vs. increase in

static pressure is available and sufficient analytical data on uranium content is obtained. The static pressure change will be used as a guide to the uranium content of the filter. A mass limit of 100 g. of uranium is established for build up on the filter. Preliminary analysis of the ash in the fly ash collector has shown approximately 0.4% uranium. Assuming that dust on the filter has the same uranium content, then the dust accumulation on the filter would have to amount approximately to 50 lbs. to reach the 100 g. limit for uranium content. It is expected that the filter will be changed long before the uranium mass limit is reached. The uranium bearing filters will be retained for recovery or disposal through approved channels.

4. The blower and outside exhaust stack will be monitored monthly to insure that no significant amount of uranium is passing through the filter and collecting in these areas.

5. Air samples of the exhaust gasses leaving the stack will be taken weekly to verify that the filter system is continuing to operate satisfactorily and that the airborne contamination remains below the limits established in Title 10, Part 20. Code of Federal Regulations.

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