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# INTEROFFICE CORRESPONDENCE



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DATE: January 25, 1993

TO: E. H. Wilson, ES&E, DW051, 273-6038

FROM: M. C. Rupert, ES&E, Bldg. DW051, 273-6115 *uucbr*

SUBJECT: ROTARY REACTOR FEASIBILITY STUDY-MCR-001-93

PURPOSE:

The purpose of this memo is to provide initial comment on the Rollins Rotary Reactor (RRR) and its ability to thermally treat mixed waste from Rocky Flats.

BACKGROUND:

The Department of Defense Appropriations Act for Fiscal Year 1992, Public Law 102-172, specified that \$2.0 Million be used for a feasibility study dealing with the use of a Rotary Reactor for the thermal treatment of wastes regulated under the Resource Conservation and Recovery Act of 1976 (RCRA). Advanced Sciences Incorporated (ASI) has recently proposed the Rollins Rotary Reactor as a candidate for that feasibility study.

Discussion:

The RRR incinerator was developed by Rollins Environmental Services Incorporated for the thermal treatment of low calorific value commercial waste streams. Conventional Rotary Kilns had been previously used to incinerate this type of material, although high moisture and low BTU contents made this a potentially costly method of disposal due to thermal inefficiencies. To solve this problem, the RRR was built using patented internal mixing devices that fluidize the charge and improve heat transfer. The RRR was designed to thermally destroy a wide variety of waste sludges and contaminated soils with a minimum use of auxiliary fuel.

Given its ability to treat a wide variety of waste sludges and contaminated soils, the RRR offers potential for the cleanup of these types of materials at RFP. Recent estimates of candidate wastes at RFP which may be amenable to treatment using the RRR are on the order of 2 million cubic yards of material. The potential benefit of this technology is in its ability to remove waste impurities through incineration or produce a concentrated waste through water elimination.

While the technology is certainly suitable for consideration in the treatment of ER wastes at RFP, several areas need to be reviewed as part of the technology screening process:

- The RRR in its current configuration has only been used to treat hazardous wastes, not mixed wastes. It has been permitted on that basis as well. Additional measures would undoubtedly need to be taken to operate using mixed wastes.
- Introduction of a mixed waste into the RRR would probably cause a finite distribution of the actinides into the process products, whether from actinide volatilization or simple carry-over of contaminated particles in the gas stream into the process scrubber.

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- The capital expense of building such a process would be fairly large (> \$ 20 Million) ? Would the cost of building such a unit at RFP be supported by the materials available, or would off-site treatment be preferable on a toll basis?
- Could some of the fundamental questions be answered in lab scale? Questions such as actinide volatility and material amenability may best be answered in a smaller scale.

At this early stage in the feasibility study process, the RRR offers potential for the treatment of mixed wastes at RFP. The process has previously been shown to be effective for the treatment of sludges, contaminated soils and liquid/organic mixtures.

RECOMMENDATION:

The RRR should be considered as a high temperature treatment technology for use at RFP. A formalized feasibility study should be initiated to further investigate the technology.

RESPONSE REQUIREMENTS:

None required. If you have any questions, please call M. C. Rupert, at X6161 or Pager #7456

MCR:mp

cc:

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