1992 WL 381301 (F.R.)

NOTICES

DEPARTMENT OF ENERGY

Finding of No Significant Impact, Consolidated Incineration Facility at the Savannah River Site, Aiken, SC

Thursday, December 24, 1992

***61402** AGENCY: Department of Energy.

ACTION: Finding of no significant impact.

SUMMARY: The U.S. Department of Energy (DOE) has prepared an environmental assessment (EA) (DOE/EA-0400) for the proposed construction and operation of the Consolidated Incineration Facility (CIF) at the Savannah River Site (SRS), Aiken, South Carolina. The CIF would be for the treatment of hazardous, low- level radioactive, and mixed (both hazardous and radioactive) wastes from SRS. Incineration would reduce the volume and toxicity of these wastes. Construction and operation of the CIF would be subject to the conditions of permits issued by the South Carolina Department of Health and Environmental Control and the U.S. Environmental Protection Agency (EPA).

Based on the analysis presented in the EA, DOE issued a proposed finding of no significant impact (FONSI) on June 24, 1992. During the week of June 28, 1992, copies of the EA and proposed FONSI were distributed to the Governors of Georgia and South Carolina, local officials, interested organizations, news media, and DOE Public Reading rooms. Copies of the proposed FONSI were also sent to more than 1000 individuals and organizations on the SRS mailing list. The proposed FONSI was published in the Federal Register on July 1, 1992, beginning a 30-day public review period (57 FR 29299). In response to several requests, the public review period was extended to August 31, 1992; notification of this ***61403** extension was published in the Federal Register on July 31, 1992 (57 FR 33946).

In total, 14 Federal and State agencies, 11 organizations, and 35 individuals submitted comments during the review period. Those comments and DOE's responses are presented in appendix B to the EA, "Response to Public Comments." A summary of the public comments and DOE responses are included in the Attachment to this finding. DOE has added a reference in the EA to recent solid waste forecast information, and has deleted a reference to "applicable dioxin emission standards" because none exist. DOE has also added a calculus of the risk to the exposed population from potential accidents using a risk factor of $5x10^{4}$ latent cancer fatalities per person-rem. None of these updates constitutes a material change to the EA's analysis.

After considering all the comments received as a result of the public review process, DOE has concluded that no information has been made available that alters DOE's proposed FONSI. Therefore, DOE has determined that the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.). Accordingly, DOE is issuing this FONSI.

ADDRESSES: Persons requesting additional information regarding the CIF project or wishing a copy of the EA should contact: Stephen Wright, Director, Environmental and Laboratory Programs Division, Savannah River Field Office, U.S. Department of Energy, P.O. Box A, Aiken, South Carolina 29802, Telephone: (803) 725-3957.

FOR FURTHER INFORMATION CONTACT:Persons requesting further information regarding DOE's general NEPA procedures should contact: Carol M. Borgstrom, Director, Office of NEPA Oversight

(EH-25), U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585, Telephone: (202) 586-4600 or (800) 472-2756.

SUPPLEMENTARY INFORMATION:

Proposed Action

The SRS CIF is part of the strategy for the treatment, storage, and disposal of SRS waste as described in the Final Environmental Impact Statement (EIS), Waste Management Activities for Groundwater Protection, Savannah River Plant, Aiken, South Carolina (DOE/EIS-0120), December, 1987. The proposed action involves the construction and operation of the CIF for (1) the treatment of hazardous and mixed waste at SRS to enable SRS to comply with Resource Conservation and Recovery Act (RCRA) requirements for the treatment of hazardous and mixed wastes before land disposal; (2) volume reduction of low- level radioactive waste before disposal; and (3) the elimination of current SRS shipments of burnable hazardous waste for offsite treatment and disposal. The CIF is scheduled to start operating in 1995.

The types of waste proposed to be incinerated in the CIF include hazardous waste and low-level radioactive and mixed waste (waste that is or is presumed to be both hazardous and radioactive). These wastes are primarily generated during normal SRS operations and consist of solids, sludges, and organic and aqueous liquids; examples are oils, paints, solids, solvents, rags, clothing, and floor cleaning equipment. The CIF would not receive or treat waste containing dioxins or polychlorinated biphenyls.

The CIF would have a rotary kiln combustion chamber and a secondary combustion chamber (SCC) to ensure 99.99 percent destruction of all hazardous constituents. The CIF offgas treatment system would ensure that the SCC offgas meets all applicable regulatory requirements before discharge to the environment. At designed operating capacities, approximately 30 pounds per hour of residual ash would result from CIF operation and would be solidified for disposal at SRS in a proposed RCRA-permitted facility.

The CIF would be located near the center of the SRS in the 200-H Chemical Separations Area. The facility would consist of a new concrete and steel open building of approximately 31,000 square feet with processing facilities, control rooms, waste receiving areas, and waste handling areas. The CIF process building would have an exhaust stack to handle offgas from the incinerator and exhaust air from the building ventilation system. The offgas would be cooled in a quench vessel and would enter a free jet scrubber to remove particulates and acid gases before entering a cyclone separator to remove entrained moisture. The offgas would also pass through a mist eliminator and a series of high-efficiency particulate air (HEPA) filters to remove fine particulates (including radioactive particulates) before the emissions would be monitored and released through the stack. The building ventilation system would provide exhaust hoods around each of the kiln seals for the collection and HEPA filtration of any emissions.

Alternatives Considered

Under the No Action alternative, the CIF would not be constructed or operated. Untreated waste would continue to accumulate at SRS. This alternative would result in the continued offsite shipment of waste, and would impair SRS's ability to comply with RCRA land ban requirements.

An offsite treatment and disposal alternative would involve shipping burnable hazardous waste to offsite incinerators (DOE or commercial) and shipping mixed wastes to offsite DOE mixed waste incinerators (commercial capacity not available). However, sufficient capacity would not be available at DOE incinerators for the volume of SRS mixed waste. Even if capacity were available, the alternative would involve the costs and environmental impacts associated with any necessary modifications to other facilities and offsite transportation of hazardous and mixed wastes. It would also make SRS operations more dependent upon the availability of other facilities.

Another alternative would be to construct two incinerators at SRS--one incinerator to burn miscellaneous solid and liquid hazardous wastes, with a subsequent upgrade to handle radioactive waste, and the second to burn only organic liquid waste from the Defense Waste Processing Facility. This alternative would allow the use of different technologies and potentially lower direct treatment costs. However, this alternative would substantially duplicate facilities and increase costs. The duplication of equipment would also result in higher actual and potential emissions, e.g., from

duplicate tank vents. Moreover, whether a single incinerator or two separate incinerators were used, either alternative would have to meet the same destruction and removal efficiency requirements and other offgas quality standards.

Other treatment methods for hazardous wastes (i.e., solidification, biological treatment, and chemical treatment) were considered as alternatives. A separate treatment method could be used for each waste stream, possibly increasing the efficiency of the treatment of each waste. If separate waste treatment processes were chosen, facility costs would be higher because of the need to construct, operate, and maintain multiple facilities. Such multiple facilities would increase land usage and fugitive emissions due to the possible duplication of equipment. No other treatment method compares favorably ***61404** with incineration, which EPA has identified (40 part 268) as the Best Demonstrated Available Technology for treatment of many SRS hazardous wastes.

Environmental Considerations

The CIF would occupy 3 acres of previously developed land adjacent to H-Area, a location that has been subjected to construction impacts since the early 1950s. The peak construction workforce of 175 workers would have negligible effects on area land use, housing, and social services. No significant impacts on ecological resources are expected due to the minimal habitat quality of the proposed CIF site. No floodplains, wetlands, or archaeological or historical sites exist on the site. Air quality impacts from construction activities are expected to be negligible. Once operational, the facility would employ 39 people. It is anticipated that many of these positions would be filled by personnel already employed at SRS.

Liquid wastes from CIF processing operations would be collected in permitted storage tanks before being treated for disposal in a SRS RCRA- permitted vault disposal unit. Other liquid wastes from CIF operations, such as sanitary wastewater, would be analyzed and treated, as appropriate, before being discharged in compliance with the current National Pollutant Discharge Elimination System permit.

Air emissions from the CIF would be controlled to levels significantly below the applicable EPA Prevention of Significant Deterioration emission requirements. Therefore, the CIF would not be expected to significantly change regional ambient air quality. The CIF would be designed and operated to achieve a 99.99 percent minimum destruction and removal efficiency of principal organic hazardous constituents, as required by South Carolina air pollution control and hazardous waste management regulations for the wastes proposed to be incinerated at the CIF. Trial burn and periodic emission monitoring programs required by State and Federal regulations would be undertaken to confirm that CIF air emissions are within state and Federal standards.

The National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations (40 CFR part 61) limit radionuclide emissions from DOE facilities to amounts that would cause no more than a 10 mrem per year effective dose-equivalent to any member of the public. A NESHAP permit for CIF construction has been obtained from EPA. Total annual radionuclide releases to the atmosphere from the proposed CIF routine operations are estimated to be 1200 curies. The maximum effective dose to an individual at the SRS boundary from such releases is projected to be 0.003 mrem per year. The maximum combined dose from the existing operation of SRS and the CIF would remain at approximately 0.5 mrem to the maximally exposed individual at the plant boundary. This is well below the NESHAP limit. The EA also indicates that dioxin emissions from the CIF would be small; emissions from a similar incinerator in New York were less than the New York State standard.

Routine CIF processing activities would result in only minor radiological and chemical exposures to onsite operating personnel. Engineering and administrative controls would ensure that the annual effective dose equivalent to any SRS worker would not exceed the DOE limit of 5 rem (DOE Order 5480.11) and that any chemical exposure would be within safe limits.

Potential accidents associated with CIF operations are addressed in the EA and a safety assessment document for the facility. Facility accidents addressed in the EA include natural phenomena (wind or tornado), earthquakes, fire, nuclear criticality, explosion in the incinerator chamber(s), benzene release, and human-caused external events. Onsite transportation accidents were also evaluated. Using a relation between radiation dose and consequent health effects of $4x10^{-4}$ latent cancer fatalities per person-rem, none of these accidents would be expected to produce any radiation-induced fatal cancers in the exposed population, either onsite or offsite. [FN1]

FN1 Even if a factor of $5x10^{-4}$ were used (Nuclear Regulatory Commission, 56 FR 23360, May 21, 1991), none of these accidents would be expected to produce any radiation-induced fatal cancers in the exposed population, either onsite or offsite.

For carcinogens such as benzene, EPA requires that risk be reduced to below 10^{-4} (i.e., 1 excess cancer death in ten thousand people) in exposed receptors. In the case of benzene release under maximum reasonably foreseeable accident conditions involving a spill of the benzene inventory into the secondary containment system, the estimated carcinogenic risk is $6x10^{-7}$ for the maximally exposed offsite individual, $4x10^{-6}$ for an individual at the spill site, and $2x10^{-8}$ for an onsite individual 5 miles from the spill, when computed using the EPA rise assessment methodology. Smaller but potentially more frequent releases could occur from minor spills or process upsets. However, the analysis determined that no chronic exposure hazards would exist for onsite or offsite populations, and that the probability of an accident that could produce a harmful exposure would be very low.

Determination

Based on the information and the analyses in the EA for the CIF as well as the review of the information received from the commenters, the proposed action does not constitute a major Federal action that would significantly affect the quality of the human environment within the meaning of NEPA. Therefore, DOE has determined that preparation of an EIS is not required.

Issued at Washington, D.C., this 18th day of December 1992.

Paul L. Ziemer,

Assistant Secretary, Environment, Safety and Health.

Attachment--Summary of Comments Received on the Proposed FONSI

All of the comments received by DOE during the comment period from July 1 to August 31, 1992, and the corresponding responses are included in "Response to Public Comments," appendix B to the EA. The following summary briefly describes the nine major categories of comments and DOE's responses. Readers interested in specific comments or DOE's detailed responses should refer to appendix B.

A. Appropriate Level of NEPA Review

Many comments urged DOE to prepare an EIS for the CIF. One reason provided was that DOE's regulations for implementing NEPA (57 FR 15122, April 24, 1992) specify an EIS as the appropriate level of review for an incinerator such as the CIF, unless there are extraordinary circumstances that affect the significance of the proposal's impacts. The preparation of an EIS for the incinerator at DOE's Gaseous Diffusion Plant at Oak Ridge, Tennessee, was cited as precedent for requiring an EIS. Under the DOE NEPA guidelines (52 FR 47662, December 15, 1987) that were in effect at the time DOE decided to prepare an EA for the CIF, there were no specific requirements regarding the type of NEPA documentation that should be prepared for the siting, construction, and operation of incinerators. Accordingly, DOE Headquarters held extensive discussions with SRS staff concerning the proposed CIF and its potential impacts. DOE also reviewed the characteristics and NEPA document level determination of other DOE incinerators. Based on this review, DOE concluded that it was not clear that ***61405** significant environmental impacts would result from the proposed action. Therefore, in accordance with applicable provisions of the Council on Environmental Quality's (CEQ) regulations implementing NEPA, DOE determined that it was appropriate to prepare an EA for the proposed CIF as the basis for determining whether to prepare an EIS or to issue a FONSI.

On May 26, 1992, a new DOE NEPA rule took effect which provides that an EIS will normally be prepared for proposals involving the siting, construction, and operation of incinerators such as the CIF. The rule provides that DOE need not prepare an EIS for incinerator proposals in cases where "there are extraordinary circumstances related to the specific proposal that may affect the significance of the environmental effects of the proposal" (57 FR at 15151, to be codified at 10 CFR 1021.400(c)).

The EA demonstrates that this specific incinerator proposal (i.e., the CIF) presents the type of extraordinary circumstances referred to in the rule. The conclusion that the CIF would not significantly affect the environment results from a combination of favorable factors: A site located on previously developed land and remote from any population centers; a facility design that incorporates many features to avoid or mitigate harmful emissions during normal and abnormal operations; and effective treatment of incinerator residuals, Consistent with the procedure CEQ provides when an agency believes a FONSi is warranted for a proposed action for which it would normally required an EIS (40 CFR 1501.4(e)(2)(i)), DOE made the Proposed FONSI available for public review for 30 days (extended to 60 days) before making its final determination regarding preparation of an EIS.

In any case, the preamble to DOE's new NEPA rule indicates that DOE intended to apply the rule to NEPA documents that had been initiated before the rule's effective date "to the fullest extent practicable" (57 FR at 15123). The new DOE NEPA rule took effect only one month before DOE issued the EA on the proposed CIF. It would not have been practicable to prepare an EIS on the proposed CIF where the EA was substantially complete at the time the new DOE NEPA rule took effect, and where the EA indicates that the proposed CIF would not significantly affect the environment.

In 1982, DOE issued an EIS for an incinerator that was subsequently built at DOE's Oak Ridge, Tennessee, Gaseous Diffusion Plant. The DOE incinerator at Oak Ridge differs from the proposed CIF in several respects, including: Type quantity, and source of waste feeds; design; stack emissions; aqueous effluents; and surrounding environment, including distance to land with public access. These differences preclude a conclusion that an EIS should be prepared for the proposed CIF only because an EIS was prepared for the Oak Ridge incinerator. DOE's decision to prepare an EA to as the basis for a decision of whether to prepare an EIS for the proposed CIF is in accordance with DOE regulations and policy and CEQ regulations.

B. Future SRS Waste Management Needs

Some commenters pointed to the significant change in the world political environment and questioned the continued mission of DOE to produce nuclear materials, the need for a waste treatment facility like the CIF at SRS, and the accuracy of DOE's prediction of the quantity of SRS generated wastes to be incinerated.

The mission of SRS is to serve the national interest of the United States by safely producing nuclear materials while protecting employee and public health and the environment. DOE recognizes that in recent years there has been a significant change in the world's political environment. In 1990, the Secretary of Energy chartered a Complex Reconfiguration Committee to reexamine the future activities of DOE. While the Secretary can encourage the evolution of the Department towards a new set of missions, in part developed by independent committees, task forces, and other citizen recommendations, any change to DOE's missions must come from the President and Congress. Although DOE has initiated an effort to determine in the long term how SRS capabilities can best be employed to serve the national interest, that effort has not yet reached the point of formulating any specific proposals for consideration by Congress and the President.

It is expected that environmental restoration and waste management activities will continue over time to increase at SRS. These activities will likely include decontamination and decommissioning (D&D) of SRS facilities. The CIF would provide SRS with the ability to treat many combustible hazardous and mixed wastes generated onsite, including those that might be generated from facility D&D. If nuclear facilities at SRS become part of a D&D program, waste volumes would increase. Many of the "job control" wastes generated by D&D activities (contaminated protective clothing and equipment, rags, etc.) would be identical to wastes currently generated from SRS operations and maintenance activities. Even though the waste volumes have changed since the initial sizing of the CIF, a re-evaluation of the waste volumes indicates that the sizing of the CIF is justified utilizing only SRS waste. Reference to this re- evaluation has been added to section 2.1 of the EA.

Should any mission change at SRS involve hazardous constituents different from those listed in the CIF Resource Conservation and Recovery Act (RCRA) permits, SRS would be required to request a permit modification from either the South Carolina Department of Health and Environmental Control (SCDHEC) or the U.S. Environmental Protection Agency (EPA), which in turn would require a public comment period. In that event, DOE would also determine if any further NEPA documentation would be required.

C. Waste Stream/Offsite Wastes (See Also Section D, Waste Management)

Some commenters either predicted the CIF would be used to treat offsite wastes or inquired if offsite wastes would be incinerated. Commenters stated that, by failing to consider the potential impacts from transport and treatment of offsite wastes, the EA illegally segments the action.
Construction and operation of the CIF is being regulated by SCDHEC and by EPA under RCRA. SCDHEC and EPA have issued to DOE permits setting conditions for constructing and operating the CIF. Condition IIIE4.D.1 of the SCDHEC permit states that no offsite wastes shall be accepted or managed at the CIF. SRS is prohibited from incinerating offsite wastes without first applying for and receiving a RCRA permit modification. This would require an additional public comment period. Further, management of offsite wastes at the CIF would have to be addressed through appropriate NEPA documentation.
SRS has fully characterized the existing waste inventory that would be incinerated under existing permit conditions. Condition III.E5.C.1.c of the SCDHEC permit requires that nine months prior to the trial burn, DOE would submit for review and comment an updated report of hazardous waste feed volumes and composition, based upon SRS waste only. That report would include:
1. The annual volume of SRS generated hazardous waste to be incinerated.
***61406** 2. The necessary incinerator waste feed rates for the existing and annually-generated hazardous wastes.
3. An explanation of how the necessary waste feed rates for the incinerator were determined.
4. Any changes in waste character from the description of waste to be incinerated given in Volume X of the RCRA permit application.
A final waste feed assessment report addressing SCDHEC comments would be completed and submitted for SCDHEC approval prior to the trial burn. DOE does not expect that the final Waste Feed Assessment Report will depart materially from the waste fees considered in the EA.

D. Waste Management

Several commenters criticized the choice of incineration as a waste treatment process, some arguing that the byproduct wastes could not be disposed of adequately. Some suggested that waste generation be minimized instead of incinerating the waste.
EPA regulations impose stringent conditions on the treatment, storage, and disposal of hazardous and mixed wastes. DOE and EPA have signed a Federal Facilities Compliance Agreement (FFCA) which commits SRS to the construction and operation of several proposed facilities, including the CIF, for treating certain mixed wastes.
Currently, mixed wastes are stored at SRS and hazardous wastes are being shipped offsite for RCRA-specified treatment. As discussed in Section E (Technologies) below, incineration is the RCRA-specified treatment for many of SRS's waste streams, as well as the best demonstrated available technology (BDAT) for many others. Incineration would render these wastes less hazardous to public health and the environment and would reduce the volume of wastes requiring permitted disposal.
Secondary waste streams from the CIF must be managed in accordance with RCRA regulations. Ash from the kiln would be cement-stabilized and disposed of in onsite vaults. The CIF liquid waste, fly-ash, and blowdown would be stabilized to meet the regulatory requirements for disposal. In the commercial and nuclear industry sectors, a majority of solidification systems successfully utilize hydraulic cement to encapsulate ash materials and other waste contaminants. RCRA Land Disposal Restrictions (LDR) regulations (40 CFR part 268) require that such a solidified waste form meet applicable treatment standards before it can be disposed of. A CIF solidified waste form would not be disposed of unless it can meet EPA and DOE requirements for disposal.
The onsite disposal vaults that would receive solidified CIF wastes would be permitted by EPA and SCDHEC. A RCRA Part B permit application for these vaults was submitted to SCDHEC in 1988. NEPA review of these vaults is included in the 1987 SRS Waste Management Activities for Groundwater Protection EIS (DOE/EIS-0120). The Record of Decision was published in March 1988.
SRS has implemented a waste minimization program, which reduces the waste at the generation site. The EA states on page 1-2 that "a variety of techniques are being explored and utilized to minimize waste, and a number of techniques have been implemented, resulting in reduced generation rate for various SRS waste streams. Among these techniques are process and raw material changes, waste segregation (separate waste into toxic and non-toxic fractions), recycling

and reuse of waste, and employee awareness training, one or more minimization techniques such as those listed above are selected and implemented, and progress toward established goals is reported an monitored. Significant waste reductions have already been realized at SRS."

E. Technologies

Some commenters questioned the choice of incineration instead of other treatment methods as the proposed means of treating SRS wastes. Other commenters questioned whether DOE was following EPA's LDR regulations and BDAT requirements for the wastes to be treated.
The CIF is the preferred alternative to other waste treatment alternatives addressed in the EA because:
--Incineration is the RCRA-specified treatment for the hazardous portion of certain mixed wastes generated at SRS.
--Treatment onsite would avoid having to transport SRS waste to another site for treatment and/or disposal.
The EPA LDR regulations establish treatment standards for wastes that must be met before final disposal (e.g., a landfill). There are two types of treatment standards:
--A technology standards requires that a waste must be treated by a specific industrial treatment process that has been shown to render the waste safe for disposal.
--A concentration standard sets the maximum allowable concentration of a hazardous constituent in a waste at the time of disposal. While any process may be legally used to achieve a concentration standard, the best results are usually achieved by application of BDAT. EPA sets a concentration standard after determining which commercially-available industrial process achieves the lowest concentration of a hazardous constituents in a waste. Usually the process that provides the lowest concentration is designated the BDAT. In many cases the concentration standard may only be achievable by use of the BDAT.
The CIF would meet the EPA LDR treatment standards for all 230 waste codes that it would be permitted to treat. The incineration portion of the CIF process is the specified treatment process (technology standard) or the BDAT (where concentration standards are used) for 80% of these codes. The stabilization and neutralization portions of the CIF process would meet the EPA LDR treatment standards for the remaining 20% by being the specified treatment (technology standard) or by achieving the required concentrations (concentration standards).
Additionally, incineration is the technology that achieves the greatest volume reduction benefit for the large amount of low-level radioactive waste (LLW) generated at SRS. Incineration achieves a significantly higher volume reduction than other technologies such as supercompaction. Another advantage of the CIF process over other volume reduction methods for LLW is that the resultant ash from the CIF would be solidified, which would immobilize the radioactive contaminants to prevent leaching. Supercompaction or other volume reducing methods other than incineration do not immobilize the radioactive contaminants.
Although incineration is the RCRA-specified treatment technology for certain SRS mixed wastes, the EA considered alternatives to the CIF system that were proven technologies and commercially available. Technologies, such as chemical or biological treatment, were also considered in section 2.4 of the EA.

F. Health

Many commenters questioned DOE's procedures for estimating the health effects for workers and the general public that might result from operation of the CIF.
DOE used EPA risk assessment guidance, exposure models, and air dispersion models to assess whether operation of the CIF would pose significant risks to human health and the environment. DOE agrees with the ***61407** recent findings of EPA's Science Advisory Board that recommends risk-based decisionmaking. Based on the very conservative assumptions (that tend to overestimate risks) built into the EPA models and risk equations, additional risk assessments were not considered.
EPA's proposed rules for controlling toxic emissions from hazardous waste incinerators are explained in detail in the April 27, 1990, Federal Register (55 FR 17862). DOE used this conservative risk-based approach to establish risk-based air concentrations and to set CIF emissions limits. These risk-based emission limits are incorporated into the SCDHEC RCRA permit. (Also see section H, below.)
The risk-based emission limits incorporate many protective assumptions to ensure that the most

sensitive subpopulations (such as the very young and the very old) would be protected during periods of maximum exposure. The aggregate carcinogenic risk to the maximally exposed individual (MEI) is established at 1 in 100,000 ($1x10^{-5}$). For toxic compounds that do not exhibit carcinogenic effects, CIF air emissions are allowed to contribute only 25 percent of the dose that would exceed a health-based threshold. The results of these analyses indicate that potential emissions from CIF would be below risk-based emission limits.

DOE has also used several EPA approved air dispersion models to assess potential impacts on human health and the environment from emissions of heavy metals and radionuclides. DOE used the TSCREEN (Toxic Screening) model for heavy metals and organics, and the Industrial Source Complex Short-Term (ISCST) model for heavy metals and hydrogen chloride (HC1). For radionuclides, DOE used the CAP-88 model, which considers doses from all major pathways including inhalation and food chain effects.

G. Destruction & Removal Efficiency

Some commenters questioned the ability of the CIF to achieve and maintain a 99.99% destruction and removal efficiency (DRE).

After testing the capabilities of existing hazardous waste incinerators, the EPA has established strict emission and performance standards for hazardous waste incinerators (40 CFR part 264, subpart O). EPA has determined that these standards can be reliably and consistently achieved and are protective of human health and the environment.

The EPA standards require that no more than 0.01 percent of the principal organic hazardous constituents (POHC)--the organic chemicals used to test an incinerator--can be emitted unburned from the facility stack. This equates to a minimum DRE of 99.99 percent. Trial burns of hazardous waste incinerators have repeatedly demonstrated that the 99.99 percent DRE performance standard can be readily met. In fact, DREs of 99.999 percent or better are frequently achieved, such as the Kodak incinerator in Rochester, New York.

A trial burn tests a hazardous waste incinerator's ability to achieve performance standards--including DRE--under conditions that would make achieving such standards difficult. It should be noted that there are well recognized operating methods which can increase DRE. For example, DRE generally increases as combustion temperature is raised; DRE is also improved the longer waste remains at the combustion temperature. If the trial burn is successful in demonstrating a DRE of 99.99 percent or greater, the permitting authority will generally establish the range of operating conditions used in the test as the boundary conditions for routine operation.

Similarly, test chemicals selected for use in a trial burn are those that are as difficult or more difficult to destroy than those the incinerator would be permitted to process. EPA has ranked RCRA regulated hazardous constituents according to their resistance to incineration. This ranking is used to select test chemicals more resistant than the wastes to be incinerated. In summary, trial burn conditions are designed to be more severe than routine operating conditions. This ensures that routine operations can comply with the DRE standard.

The EPA approved CIF trial burn plan can be found in Section D-5 of the CIF RCRA permit application. The trial burn plan details the composition of the test feeds, the operating conditions to be tested, and the final permitted operating conditions that may be modified based on results of the trial burn. The trial burn plan also discusses operating data collection methods, instrument calibration procedures, sample collection and analysis protocols, chain-of-custody procedures, reporting requirements, and quality assurance procedures that would be utilized to ensure that the trial burn is properly conducted and accurately reflects the CIF's ability to reliably achieve the EPA performance standards.

To minimize emission increases that could result from process upsets, (e.g., a low temperature excursion in the rotary kiln or a reduction of scrubbing liquid flow to the free jet scrubber), equipment failures, or operator error, various measures will be employed to reduce the probability of occurrence and impact of such incidents. For example, engineering features, such as a waste feed cutoff system, will be built into the CIF. This system will automatically and instantaneously shut off waste feeds when the computer control system detects the existence of a problem condition (e.g., combustion temperature deviates outside of EPA and SCDHEC approved limits). Also, installed spare equipment and backup systems will be used in critical areas of the process (e.g., high efficiency particulate air (HEPA) filters) to immediately replace malfunctioning equipment to promote

continued, efficient operation.
Carbon monoxide (CO) and oxygen concentrations in the stack gas would also be continuously monitored in the CIF. EPA has determined as a basis for proposed incinerator regulations (55 FR 17862, April 27, 1990) that a stack CO concentration of less than 100 parts per million by volume (ppmv) indicates that a high combustion efficiency in the incinerator is being achieved. This in turn indicates that POHC destruction is being maintained above 99.99% and the formation of products of incomplete combustion (PIC) are being limited to insignificant levels. The CIF would be equipped an automatic waste feed cutoff interlock that would terminate waste combustion if the CO monitor indication exceeds 100 ppmv, which would prevent a significant emission of unburned organic waste constituents and PICs.
Administrative programs--including daily testing of key parts of the waste feed cutoff system--would also minimize the likelihood of an upset or malfunction. Comprehensive training of CIF operating personnel, performed and documented in accordance with DOE and regulatory requirements, is also expected to minimize the chance of operator error.

H. Stack Emissions

Many commenters were concerned about DOE's estimates of the relative destruction of the various waste components and the composition and dispersion of stack emissions.
As stated in Section G, DOE expects the trial burn to verify that the CIF would achieve a DRE of at least 99.99 percent of POHCs. Sampling would be conducted during the trial burn to quantify and qualify POHCs. Details ***61408*** concerning selection of POHCs and their destruction during the trial burn are found in the CIF RCRA Part B Permit Application.
The approved SCDHEC air pollution control permit for the CIF specifies the maximum allowable feed quantity and maximum allowable emission of each hazardous metal and organic compound that the CIF may incinerate. The metals emission calculations are provided in appendix 2 of the same document.
The dispersion of these emissions in the atmosphere was modeled utilizing the EPA TSCREEN model and the ISCST model. The resulting ambient air concentration for each hazardous constituent was then compared to the regulatory standard established in SCDHEC Air Regulation 61-62.5 Standard No. 8, Toxic Air Pollutants.
In all cases, the concentrations were found to be less than the SCDHEC standards. Estimated emissions of hazardous metals and hydrochloric acid from the CIF were also determined to be well below EPA limits for control of heavy metal and hydrochloric acid emissions (risk-based limits found in 55 FR 17862, April 27, 1990). The CIF Clean Air Act and RCRA permit applications document the calculations that predict pollutant generation and apply emission control factors to arrive at predicted emissions removal.
When wastes containing both combustible materials (e.g., organic compounds, paper) and noncombustible materials (e.g., metals and radionuclides) are incinerated, the combustible fraction would be destroyed and its associated toxicity reduced or eliminated. The CIF has been designed to ensure that the amounts of non-combustible hazardous material entering the facility are strictly controlled. Also, pollution control devices (scrubbers, filters, etc.) have been designed to prevent constituents from being emitted from the stack in harmful quantities. Prior to combustion in the CIF, all waste material would undergo a thorough analysis to ensure that non-combustible metals and radionuclides do not exceed pre-established limits.
Most metals and radionuclides processed through the CIF would remain in the residual ash or be captured by the offgas scrubber and HEPA filters. The ash material, scrubber residues, and HEPA filter elements containing the captured metals and radionuclides would be treated and disposed of in accordance with RCRA requirements.
Metals and radionuclides not captured in the ash, offgas scrubbers, or HEPA filters would be emitted from the stack. However, as described above, DOE used SCDHEC air regulations, air dispersion models, and EPA risk-based limits so that the CIF's emissions would meet all public health and environmental requirements for air emissions. It should be noted that CIF emissions are estimated to be below permit requirements for all contaminants.

I. Emission Monitoring

Several commenters were concerned about the monitoring of the emissions from the CIF, raising

questions about the compounds that would be monitored, techniques that would be used, and the frequency of monitoring.

SRS operates a network of approximately 30 radiological air quality monitoring stations, some of which are located off site. Additionally, the States of South Carolina and Georgia operate nonradiological monitoring stations in the vicinity of SRS. Although air dispersion modeling has indicated that no measurable air quality impacts would result from the CIF, these stations would be available to detect certain ambient air quality changes that could result from operation of the CIF, other facilities at SRS, and private industry in the vicinity of SRS. A comprehensive discussion of the SRS environmental monitoring program may be found in the 1991 Savannah River Site Environmental Report (document number WSRC-TR-92-186).

CIF monitoring programs required by State and Federal regulations (Section 4.5.1 of the EA) refer to the initial trial burn testing and periodic follow-up testing required by the facility's operating permits and provisions of RCRA and the Clean Air Act. These testing program would initially demonstrate and periodically confirm continued compliance with the RCRA performance standard of 99.99% minimum DRE and emission limits for metals and other pollutants. The proposed CIF would have continuous stack monitoring systems for measuring radionuclide emissions and concentrations of CO and oxygen. CO and oxygen would be used as an indicator of combustion efficiency. High combustion efficiency minimizes emissions of unburned organic compounds and PICs.

The emission of other pollutants such as metals, nitrogen oxides, and uncombusted organic compounds would be measured periodically to ensure compliance with regulatory performance standards and CIF permit limitations. The scope and frequency of the periodic sampling and analysis of CIF stack emissions are being developed and would be conditions of the CIF operating permits issued by EPA and SCDHEC. The methods to be used for the continuous and periodic stack sampling and analysis are those approved by EPA and required by Clean Air Act regulations (40 CFR parts 60-61) and RCRA regulations (40 CFR part 264). The methods are further described in the following CIF permit documents: Application for a SCDHEC Air Pollution Control permit (Revision 1; July 1991). Application for a NESHAP Permit (September 1988), and Application for a Hazardous Waste Part B Permit (Revision 4; July 1991).

DOE would continue to review the advancement of continuous emission monitoring systems for organic and metal constituents. In the interim, the emission of these pollutants would be measured periodically to ensure compliance with regulatory performance standards and CIF permit limitations. The scope and frequency of the periodic sampling and analysis of CIF stack emissions are being developed and would be conditions of the CIF operating permits to be issued by EPA and SCDHEC. (FR Doc. 92-31308 Filed 12-23-92; 8:45 am)

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