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NUCLEAR REGULATORY COMMISSION

10 CFR Part 20

RIN: 3150-AC14

Disposal of Waste Oil by Incineration

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to permit the onsite incineration of contaminated waste oils generated at licensed nuclear power plants without amending existing operating licenses. This action will help to ensure that the limited capacity of licensed regional low-level waste disposal facilities is used more efficiently while maintaining releases from operating nuclear power plants at levels which are "as low as is reasonably achievable." Incineration of this class of waste must be in full compliance with the Commission's current regulations which restrict the release of radioactive materials to the environment for each operating nuclear power plant. Any other applicable Federal, State, or local requirements that relate to the toxic or hazardous characteristics of the waste oil would have

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to be satisfied. This rule constitutes a partial granting of a petition for rulemaking (PRM-20-15) submitted by Edison Electric Institute and Utility Nuclear Waste Management Group. The remaining portions of PRM-20-15 are denied without prejudice.

EFFECTIVE DATE: This regulation becomes effective on (30 days after publication in the Federal Register).

FOR FURTHER INFORMATION CONTACT: Catherine R. Mattsen, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492-3638.

SUPPLEMENTARY INFORMATION:

Background

The Petition

The Edison Electric Institute and the Utility Nuclear Waste Management Group filed a petition for rulemaking (PRM-20-15) with the Commission on July 31, 1984, to initiate rulemaking to establish a level of radioactivity in power-reactor-generated waste oils which would permit disposal of these oils without regard to their radioactive material content. The Commission requested comment on the petition in the Federal Register on September 9, 1984 (49 FR 36653).

The petitioners suggested that an appropriate basis for establishing a cutoff level for determining whether specific waste streams were below regulatory concern would be that the direct release of the specific waste streams to the environment would not result in a dose to an individual member of the general public greater than 1 mrem/yr. The petitioners recommended that using a 1 mrem/yr limit, alternative disposal methods, including --

- (1) On- or offsite incineration;
- (2) On- or offsite burial;
- (3) Road stabilization (spraying); and
- (4) Recycling, could be considered viable alternatives to land burial.

The Commission received fourteen comment letters on the petition. All but one of the commenters supported the idea of exempting slightly contaminated waste oil from the requirements for disposal at a low-level waste disposal site and most commenters supported the petition in its entirety. Consideration of the comments received on the petition contributed to the Commission decision to provide some relief through an alternative disposal method.

On August 29, 1988, the Commission published a proposed rule in the Federal Register (53 FR 32914) that would amend its regulations to allow onsite incineration of contaminated waste oils generated at licensed nuclear power plants without the need to apply for a specific license amendment. As summarized below, that Federal Register notice also proposed to deny the remaining features of the petition for rulemaking (PRM-20-15) submitted by Edison Electric Institute and Utility Nuclear Waste Management Group.

The other alternative disposal methods suggested by the petitioners appear to have acceptably low radiological impacts. However, as indicated in

the notice of proposed rulemaking, adequate information was not available to evaluate the acceptability of these disposal methods. The NRC has not received information during the interim that would alleviate this deficiency. In addition, the proposed rule indicated a number of other considerations that limit the desirability of the other alternatives in relation to onsite incineration. These considerations include --

(1) Some of the toxic or hazardous constituents contained in waste oil would be destroyed through incineration but not through other proposed disposal methods;

(2) The concentrations of radionuclides in ash or sludge may be too high to exempt an offsite incinerator or recycling center from the requirement for a radioactive materials license;

(3) An offsite incinerator or recycling center might handle waste oil from multiple reactors which could potentially result in higher impacts that were not fully analyzed by the petitioner; and

(4) Landfill disposal would require much of the same processing and handling as low-level waste burial and would produce smaller risk and cost savings than incineration.

Therefore, the NRC is granting the petitioners' request only with respect to onsite incineration. The NRC denies the remainder of PRM-20-15 without prejudice for the reasons noted in the proposed rule and summarized in this discussion. This completes NRC action on PRM-20-15.

The Proposed Rule

According to the rule, both as proposed and as now being adopted, incineration of waste oil would be carried out under existing effluent limits and recordkeeping and reporting requirements. The rule is intended to provide a potentially cost-effective and environmentally sound method for disposal of this waste stream other than burial at a licensed low-level waste disposal site. This approach will preserve the limited capacity of the regional licensed waste disposal sites, reduce the costs of waste disposal at licensed low-level waste burial sites, and eliminate a less desirable waste form at the sites thereby potentially reducing long-term maintenance costs for disposal sites. The rule will reduce fire hazards from storage of oil and risks inherent in transportation. Some recovery of energy may also result and risks from the toxic hazards of waste oil may be reduced.

Note: The proposed rule presented an amendment to § 20.305. Section 20.305 is being replaced by § 20.2004 as part of the final rule establishing the new standards for protection against radiation, published May 21, 1991 (56 FR 23360). Thus, this final rule amends both §§ 20.305 and 20.2004.

A specific feature of this rule (contained in both § 20.305(b)(3) and § 20.2004(b)(3)) is that it supersedes any existing provisions that may be contained in an individual plant license or technical specification that may be inconsistent with this rule. The rule does not exempt licensees from the requirement to comply with other applicable Commission regulations, however. Specifically, licensees must comply with the effluent release limitations of 10 CFR Part 20 and Part 50, Appendix I. The rule, in §§ 20.305(b)(1) and 20.2004(b)(1), has been clarified to reflect the requirement to comply not

only with Part 50, Appendix I based effluent limitations but also to comply with the Part 20 based effluent limitations contained in applicable license conditions other than effluent limits specifically related to incineration of waste oil. Restrictions in license conditions or technical specifications on incineration which are not consistent with the provisions of this rule, e.g., provisions which prohibit the onsite incineration of waste oil, will be eliminated from existing licenses. The rule makes the requirements for incineration of waste oil consistent among all licenses, without the need for license amendment on an individual plant basis. In particular, the rule eliminates the need for amendments to identify any new release points or specific sampling methods and removes any license conditions or technical specification restrictions from licensees already authorized to incinerate oil which would not otherwise be applicable under the rule. For example, restrictions that limit effluents from onsite incineration to a specific fraction of total effluent releases are removed. At the same time, the rule does not alter the requirement to comply with total radiological effluent release limits contained in facility technical specifications since such limits implement the provisions of 10 CFR Part 20 and Part 50, Appendix I.

Analysis of Comments

In response to the proposed rule, the Commission received comments from 25 organizations and individuals, including State regulatory agencies, the Environmental Protection Agency, utilities, industry organizations, public interest groups, and other members of the public. Copies of the comments may be examined and copied for a fee at the Commission's Public Document Room at

2120 L Street, NW. (Lower Level), Washington, DC. Nine of the commenters were opposed to the rule, fourteen either supported or generally supported it with some questions or comment. Two others gave comments without specifically supporting or opposing the rule.

Most of the commenters opposed to the rulemaking expressed concern about the health effects of increased effluents. Some commenters stated that existing effluents are unacceptable. A few commenters were concerned about the environmental effects of the proposed action. A few commenters suggested that the cost savings did not justify increasing the amount of effluents or that cost should not be a consideration at all. One commenter suggested shutting down the nuclear industry or at least not licensing any new plants. One commenter was opposed to the trend of deregulation and increasing allowable exposures. Another specifically warned the Commission not to invite public criticism. One commenter suggested that the Commission would be taking back authority for the disposal of waste from the States. Finally, one commenter was opposed to the concept of "below regulatory concern" (BRC) and opposed this rule as a de facto BRC regulation which should not precede the debate and adoption of a BRC policy.

Many of these comments were outside the scope of the rulemaking and reflected views of the commenters. No technical data or other supporting information was provided. The Commission believes that the impacts of incineration of waste oil are likely to be insignificant. In any case, the rule does not permit the total releases of effluents to exceed existing limits. The rule does not change existing effluent limits (except those restricting the fraction of total effluents from oil incineration for those licensees already authorized to incinerate waste oil). The regulatory

requirements to assure compliance with these limits continue to apply. Thus, the rule does not constitute a BRC exemption. The only direct effect of this rulemaking is to simplify the administrative process associated with the use of one alternative disposal option for one type of waste; namely, the incineration of contaminated waste oil. As to the question concerning the authority to regulate the disposal of radioactive waste, the responsibility of the States under the Low Level Radioactive Waste Policy Amendments Act of 1985 does not diminish the regulatory authority of the NRC nor does this rule diminish State authorities. The recently enacted Energy Policy Act of 1992 amends the Atomic Energy Act to provide the States with authority to regulate the disposal or off-site incineration of low-level radioactive waste exempted from regulation by the NRC in the future. The Energy Policy Act does not change any authorities with respect to on-site incineration.

Some commenters specifically opposed incineration as a disposal alternative, a number of those citing the non-radiological risks from the toxic properties of waste oil. The State of Michigan, although generally supportive, questioned the impact of potential toxic emissions and suggested consideration of the combined risks of radiation and toxic exposures. Another commenter suggested that the possible synergistic effects of chemical and radioactive exposures had not been adequately assessed. This commenter was also concerned that unless adequate temperatures were maintained during incineration, some chemicals would not be destroyed but instead would become volatilized and liberated to the environment.

The amount of oil to be disposed of by all nuclear power reactors collectively represents a very small fraction of all used oils disposed of annually. This rule does not relieve the licensee from complying with other

applicable Federal, State, and local regulations governing any other toxic or hazardous property of these materials. However, the Commission recognizes that there is some potential for the release of toxic materials during the incineration process. It is true that in order to achieve complete destruction of the organic constituents of used oil, incineration must be carried out at sufficient temperatures and with appropriate residence times so that all the oil is exposed to sufficient heat and oxygen for complete combustion. However, a high percentage of destruction of organics would be expected in any case. Even a very small boiler can achieve 99 to 99.99 percent destruction efficiency for hard-to-burn chlorinated compounds.¹ Also, there is considerable incentive for the licensee to maintain high combustion efficiency in order to avoid maintenance problems, particularly if the auxiliary boiler is used.

Although the Environmental Protection Agency (EPA) has decided that used oil should not be listed as a hazardous waste, it has been developing and has made considerable progress in completing regulations which would control the potential hazards of both used oil recycling and disposal. Some controls are applicable; others are being considered. It will be necessary for licensees to analyze their used oil to determine if it exhibits one of the characteristics of hazardous waste and to determine the applicability of EPA or State requirements. The extent of controls will vary by State, because some States list used oil as a hazardous waste and some have specific requirements applicable to any incinerator.

¹Environmental Protection Agency (50 FR 49164; November 29, 1985) noted at p. 49180.

At least some categories of used oil may present a significant potential hazard to public health and the environment. As noted, during the development of this rule, EPA has been in the process of developing regulations pertaining to used oil. Because the EPA regulations had not been completed prior to Commission's consideration of this rule, the Commission analyzed the potential impacts of releases of toxic material from incineration of waste oil assuming no particular controls were in place.

As noted in the environmental assessment for this rule, the potential toxicants from used oil fall into two classes: organic compounds and metals. The potential health effects of the many possible contaminants are varied. Some contaminants are considered carcinogenic; others are threshold toxicants, i.e., substances that produce effects on health only above certain "threshold" concentrations. More information and discussion on toxic constituents of used oil and potential health and environmental effects can be found in EPA Federal Register notices (50 FR 1684; January 11, 1985, 50 FR 49164; 50 FR 49212; and 50 FR 49258; November 29, 1985, 56 FR 48000; September 23, 1991, 57 FR 21524; May 20, 1992, and 57 FR 41566; September 10, 1992). These documents, as well as the documents cited in footnotes 2 and 3, are available for inspection at the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC.

The EPA's original decision against listing used oil as hazardous waste was based on concerns that such a listing would cause used oil to be diverted from industrial burning as fuel to illegal dumping (such as disposal in sewers, directly on the ground, and in landfills) and that illegal dumping would result in greater environmental harm than industrial burning. When this rule was proposed, the Commission assumed that the impacts from toxic

constituents would be minimized by burning, because burning is a destructive process that is expected to destroy a very large fraction of the organic constituents. In responding to the environmental concerns raised by the public comments, the Commission has examined analyses performed by the EPA which are relevant to the evaluation of environmental impacts of burning waste oil as contemplated by this rule. The EPA performed analyses in support of what it referred to as its Phase I rule (50 FR 49164; November 29, 1985) because it was a first step in regulating used oil with further regulations being contemplated. Based on these analyses, EPA established specifications for used oil fuel which include concentrations of toxic contaminants (40 CFR 266.40(e)). Used oil fuel which meets these specifications can be burned virtually without restriction because EPA has concluded that such oil when burned does not present a significantly greater risk than virgin fuel oil (50 FR 1693; January 11, 1985). The EPA analyses considered a number of potential toxicants released from burning used oil and found that those that potentially present risks to public health and safety were arsenic, cadmium, chromium, and lead. Thus, EPA established specific concentrations for these elements. Of these, lead was of most concern because high levels were found in some of the samples analyzed. However, lead in used oil was largely attributable to contamination of crank-case oils with leaded gasoline "blow-by" (50 FR 1699; January 11, 1985). Industrial used oil including reactor waste oil would not be expected to exceed the specification for lead except for some segments of metalworking oils which constitute a small percentage of reactor oils. Thus, lead would not contribute a significant impact when this oil is burned. Threshold toxicants other than lead were not considered a significant hazard, leaving potential cancer risks from arsenic, chromium, and

cadmium as the most significant impact of burning industrial used oil. In proposing its Phase I rule, EPA was concerned at the time about the widespread uncontrolled burning of used oil. It was estimated that approximately 600 million gallons of used oil were being burned each year in every conceivable circumstance - in utility, industrial, commercial, institutional, and residential sectors. The EPA's analyses included a worst-case urban scenario where used oil was burned across a large city in various types of boilers. In this scenario, over 25 million gallons of used oil were assumed to be burned in the study area (nationally well over 1 billion gallons of heating oil are burned in multiple family dwellings alone).² The used oil was burned in an array of boilers with significant overlapping of plumes that raised the ambient levels of arsenic, cadmium, and chromium. In the worst case, it was assumed that the oil contained concentrations of these metals at the 90th percentile of the data available at the time of the study and that 75 percent of the metals were released. Based on these assumptions, burning of used oil was estimated to result in exposure of the portion of the population within 5 kilometers of the center of the urban area to ambient concentrations of these metals associated with an increased cancer risk of 1 in 10,000 for chromium, 1 in 50,000 for arsenic, and 1 in 500,000 for cadmium.

All nuclear power plants together produce on the order of 300,000 gallons of used oil per year or about 0.05 percent of the amount of used oil burned annually. The NRC staff estimates that 1,000-15,000 gallons per year would be burned at any one site under this rule. The circumstances of this incineration would differ greatly from the worst-case urban scenario studied

²PEDCo Environmental, Inc., Risk Assessment of Waste Oil Burning in Boilers and Space Heaters, EPA/530-SW-84-011, August 1984.

by EPA, resulting in far smaller potential risks than those estimated for the urban scenario. Because of the small quantities of oil that could be burned, the greater distances from release points to receptors, and the distance between sites, etc., the concentration of toxicants reaching any member of the public, and thus the resulting risk, would be expected to be a very small fraction of that calculated by EPA for the worst-case urban scenario. Thus these potential risks are not considered a significant impact on the environment.

In addition to the metals discussed above, the used oil specification includes a limit of 4000 ppm of total halogens primarily designed to limit the halogenated solvent concentration of oil burned in non-industrial boilers. The EPA regulations also include a rebuttable presumption that used oil containing more than 1000 ppm total halogens is a hazardous waste because it has been mixed with halogenated hazardous waste (§ 266.40(c)). In any case, although used oil may be incidentally contaminated with small amounts of solvents, used oil as generated would generally not be expected to exceed the used oil specification for total halogens in the absence of deliberate mixing with hazardous waste.

The burning of virgin oil (i.e., oil which has not been previously used and thus not contaminated by use) results in some release of toxicants. Because the EPA was evaluating the impacts of burning oil in which a fraction of virgin oil was replaced with used oil, the impacts from those toxicants contained in used oil prior to use were considered inapplicable to setting the used oil fuel specification. Because in burning used oil in an auxiliary boiler or co-located fossil fuel plant under this rule, the licensee would also be replacing a fraction of virgin fuel oil, only the incremental impacts

of contaminants resulting from use would be applicable. However, in the case of an incinerator, all emissions resulting from the burning of used oil, would be an addition to existing emissions. The risks associated with toxicants contained in oil prior to use, while difficult to characterize, have been estimated, and found to be generally less than the risks from contaminants resulting from use, and thus would also not be significant under these circumstances.

Since the proposed rule was published and this analysis was first developed, EPA has developed new information on contamination levels by major category of used oil. A summary of this data base was published in the Federal Register on September 23, 1991 (56 FR 48000), together with a supplemental notice of proposed rulemaking concerning used oil management standards. Based on this recently developed information, EPA has also completed its reconsideration of listing used oil as hazardous waste. EPA found that all used oils do not typically and frequently meet the technical criteria for listing a waste as hazardous waste and has decided not to list used oils destined for disposal as hazardous waste (57 FR 21524; May 20, 1992). The EPA has also just promulgated a final listing decision for used oils that are recycled and a final rule on used oil management standards (57 FR 41566; September 10, 1992), and has concluded that the regulations in place including those just issued adequately protect human health and the environment and that recycled used oil need not be listed as a hazardous waste. The Commission has reviewed the newer data and concluded that it does not change the major conclusions related to the environmental impacts of burning reactor waste oil. In fact, the data suggests that the level of toxic constituents in industrial used oils are generally lower than previously

assumed from the generic data. Industrial used oils include reactor waste oils.

In response to the question of synergism in the combined effects of chemical and radiation exposure, little is presently known about the extent of synergism of various risk factors. For the most part, regulatory controls are based on overall risks from individual specific toxicants; although, in the case of radiation, doses from various radionuclides are considered together. It has not been possible to fully account for any hypothesized potential synergism of various sources of risk. However, releases of both radiological constituents and other toxics associated with the incineration of waste oil from nuclear power plants are extremely low and, therefore, could be responsible for only an extremely small part of any potential synergistic effects.

Two commenters raised questions about other potential impacts which had not been discussed in the proposed rule; specifically, worker exposures. One of these commenters was also concerned with the potential contamination of the auxiliary boiler and the resultant increased wastes to be disposed of at decommissioning as well as the potential cost of establishing the area as a radiation zone.

Occupational exposures would be expected to be very small and no greater than those associated with solidification, transport, and burial of the waste oil at a low-level waste disposal site. As suggested by the commenter, there is some potential for contaminating the auxiliary boiler if it is used to incinerate contaminated oils. Licensees should consider the potential for contamination of any equipment that is used for incineration. Factors such as concentration of the radionuclides in the oil, combustion efficiency, and

maintaining minimum off-gas temperatures will affect the degree of contamination. Although contamination of equipment can be minimized, the impact of this contamination could partially offset the savings in waste disposal space and cost achieved through incineration. As to the question of establishing an area as a radiation zone, the auxiliary boiler, or other equipment used for incineration of waste oil, would be within an area controlled by the licensee. In no case would incineration be expected to result in radiation levels requiring additional controls; that is, no new areas would be established as "radiation areas."

One commenter argued that a license amendment should continue to be required because of the public's right to a hearing on an amendment and because the public scrutiny and case-by-case staff evaluation would ensure that applicable requirements are complied with. This commenter also argued that the license amendment process should continue until more specific information is available such as a complete characterization of wastes. Another commenter was also concerned that there would be no assurance that technical specifications will be complied with, particularly because normal emissions would be expected to increase as plants age.

The potentially affected public has an opportunity for a hearing on a license amendment for a nuclear power reactor. However, the rule, both as proposed and as now promulgated in final form, only permits the incineration of waste oil onsite, if performed in compliance with existing regulatory requirements including, in particular, existing effluent limits. Amendment of licenses to authorize this activity is considered unnecessary. The Commission will use its authority to inspect and take enforcement action to ensure compliance with effluent limits as it does its other requirements. Given this

approach, the Commission was of the opinion that the issues presented by the proposed rule would be more appropriately resolved in a rulemaking proceeding. In accordance with customary NRC procedure, the proposed rule was published for comment for the express purpose of giving interested members of the public an opportunity to present their concerns and comments on these issues to the Commission.

One commenter suggested that a more comprehensive environmental analysis may indicate that incineration is not the best alternative but; possibly, onsite reprocessing would be because it would conserve petroleum resources and eliminate the release of combustion products to the atmosphere. This commenter also suggested that this rule would discourage storage for recycling which the commenter viewed as contrary to NEPA (National Environmental Policy Act).

Because most oil which is recycled is used as industrial fuel,³ recycling would not eliminate the potential for atmospheric emissions. Onsite reprocessing would involve the removal of small amounts of radioactive contamination so that the oil could be reused offsite. This option constitutes treatment and recycle rather than disposal. Unless the Commission develops specific exemptions for low concentration oils, decontamination must be completed to the extent that no radioactivity is detectable using measurement techniques approved for environmental monitoring. Because some oils cannot be sent to low-level waste disposal facilities and the cost of disposing of the other oil that can be sent has been escalating, recycling of used oil is getting more attention by the industry. Some means of incineration (i.e., use in the auxiliary boiler) may also result in a small

³EPA (51 FR 41900; November 19, 1986) noted at p. 41902.

increase in energy recovery over the practice of solidification and burial at a LLW disposal facility, which never involves eventual energy recovery. The environmental impacts of either onsite incineration or decontamination for recycle are very low. There appears to be no reason to restrict either alternative beyond whatever EPA regulations will be applicable in either case. Excessive storage onsite for potential future recycling, however, involves some risk from fire or leakage. Storage may also require the facility to obtain the necessary permits under RCRA.

One commenter was concerned with the possibility that the ash from incineration would be mixed waste which would add to the problem of waste disposal. The EPA recommended that the rule clarify that the ash needs to be monitored for heavy metals to determine whether RCRA (Resource Conservation and Recovery Act) requirements apply.

Although the ash may be mixed waste, only a small quantity of ash is produced when compared to the volume of contaminated oil incinerated. Therefore, the ash does not contribute significantly to the overall problem of mixed wastes. Because the ash is being produced at the licensee's site, adequate control can be assured. In addition, the rule makes clear that licensees are not relieved from complying with other Federal, State, and local regulations which may be applicable to other toxic or hazardous properties of these materials.

Some of the commenters supporting the proposed rule expressed the rationale for their support. Some, including the State of Indiana, noted the small public health and safety and environmental impacts. Some, including the State of Indiana and the Texas Low-Level Radioactive Waste Disposal Authority, cited the benefits in cost savings or savings in low-level waste burial space,

and one, the added flexibility. One commenter provided information concerning the practicality of incineration in general and of using used oil in the startup boiler in particular. Many of the commenters that supported the rule made suggestions for changes or clarifications.

Two commenters suggested a broader definition of waste oil such that synthetic oils and cutting, penetrating, and some other classes of oils could be incinerated. The commenters also suggested that non-waste oils (such as solvents, degreasers, grease, diesel fuels, etc.) need not be segregated from radiologically contaminated waste oils. They also proposed that waste oils used in maintenance be included.

Synthetic oils were inadvertently rather than purposefully left out of the definition of waste oil in the proposed rule and are included in the definition in the final rule. It would serve no useful purpose to treat synthetic and petroleum derived used oils differently and require identification and segregation of these oils. Cutting and penetrating oils, metalworking oils, etc., were not specifically identified in the information supplied with the petition or the Brookhaven report, "Evaluation of Potential Mixed Wastes Containing Lead, Chromium, Used Oil, or Organic Liquids" (NUREG/CR-4730)⁴ which was referenced in the proposed rule and the regulatory analysis with regard to quantities and concentrations of waste oil. Thus, these types of oil were not specifically considered. Based on the survey information in these reports, however, these other oils would be expected to

⁴Copies of NUREGs may be purchased from the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013-7082. Copies are also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. A copy is available for inspection and/or copying in the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC.

be a small percentage of the radioactively contaminated used oil needing disposal. From the perspective of radiological impacts, there is no need to limit the type of used oil which can be incinerated. (The above discussion on toxic constituents considered all types of used oils.) The licensee will be required to demonstrate that effluents meet existing radiological limits established under 10 CFR Part 20 and Part 50, Appendix I and will be responsible for ensuring that the techniques used for determining the radiological contents are adequate. Accordingly, the rule has been changed to include a broader range of oil types. The licensee, however, will have to exercise care in determining which oils should be incinerated in the equipment to be used considering both technical constraints and compliance with other applicable Federal, State, and local regulations.

Uncontaminated "non-waste" oils are not subject to the Commission's disposal requirements, but, if the uncontaminated oils are mixed with radioactively contaminated oil, they become part of a mixture which is radioactively contaminated and, therefore, subject to NRC requirements. Care should be taken prior to any mixing to ensure that oils have been sufficiently characterized to determine:

- (1) the applicability of any requirements such as EPA or State requirements;
- (2) the radioactive content (if there could be problems getting representative samples from a resultant mixture); and
- (3) the technical suitability of the potential mixture for incineration, i.e., compatibility with equipment used, water content, etc.

Within the context of the proposed rule, the word "operation" in the definition of waste oil was intended to include associated maintenance

activities. For clarification, the words "and maintenance" have been added to the final rule.

Two commenters suggested that the rationale for allowing incineration of waste oil generated onsite would also apply to the incineration of oil from other plants if the same controls and limits were applied, so that a utility would only need one incinerator to dispose of oil from its several plants.

While this may be the case, the focus of this rulemaking proceeding has been limited to the onsite incineration of waste oil generated on, not off, the reactor site. At the present time, the Commission believes that questions relating to the onsite disposal at the site of a particular reactor of waste oil generated by reactors located at other sites are better handled on a case-by-case basis.

Another commenter suggested that offsite incineration be allowed with the condition of proper ash disposal. Two others, including the petitioners, suggested the Commission reconsider the other options originally raised in the petition. Another commenter, the State of Texas, simply noted support for other methods of volume reduction. The petitioners also criticized the Commission for vagueness in the reasons given for not granting the petition in its entirety, suggesting that their analysis, provided as a comment to the notice of receipt of petition, was ignored.

The August 29, 1988 (53 FR 32914), Federal Register notice presenting the proposed rule, also included an indication of the NRC's intent to deny without prejudice the other alternatives proposed by the petitioners. The primary reason for that denial, as stated in the notice of proposed rulemaking and reiterated in the discussion of the petition in this document, was that more complete information would be needed for a rulemaking to allow any of the

other alternatives raised by the petitioners. Reconsideration of these alternatives is outside the scope of this rulemaking. As to the petitioners' contention that their analysis of comments was ignored, this analysis was considered along with the original petition, the other public comments, and the referenced report (NUREG/CR-4730). The specific deficiencies of the petitioners' comment analysis were not discussed separately.

One commenter suggested the Commission make a trial run, using contaminated oil, of a new technology, a plasma arc designed to break down toxic chemicals. Although this technology may present an environmentally sound alternative, these matters are outside the scope of the proposed rule.

One commenter suggested that only one generic § 50.59 review should be required rather than individual site specific reviews for each plant. Two other commenters suggested that the Commission clarify that the purpose of the § 50.59 review was not to determine if burning of waste oil, in and of itself, constitutes an unreviewed safety question but to review the plant specific equipment and procedural alterations attendant to this process.

The safety of burning waste oil at a reactor site cannot be determined generically. There may be some effect on the safety of reactor operation if incineration is not properly planned. Therefore, it is necessary that a plant specific determination be made, in accordance with § 50.59, to ensure that the specific equipment and procedural changes involved with the incineration will not adversely affect reactor safety.

The State of Michigan suggested a separate additional effluent limit of 1 mrem/year for waste oil incineration. Another commenter questioned whether the maximum quantity reported (5000 gal/yr) would conform to the "proposed dose limit" of 1 mrem/yr to the general public. The State of Texas suggested

that the NRC use available dose assessment computer codes to verify that this "reference dose" (1 mrem/year) will not be exceeded.

As indicated in the proposed rule, there is not enough information to select a specific radioactivity concentration or dose limit for waste oil incineration. It is projected that in most, if not all cases, effluents from contaminated waste oil incineration will constitute only a small fraction of total effluents. However, it is not considered necessary to establish a separate effluent limit for waste oil incineration, as long as the total amount of radioactivity in the effluents released from the plant, including releases from incineration of waste oil, continues to conform to existing effluent limits established under 10 CFR Part 50, Appendix I and 10 CFR Part 20.

A number of commenters suggested changes that, in fact, are not needed to satisfy the intent of the commenter. Two commenters suggested that the rule be revised to allow transfer to an offsite licensed vendor.

Nothing in this rule or in other regulations restricts the licensee from transferring waste oil to an offsite licensed "vendor," i.e., persons authorized to receive these materials. This alternative was not mentioned in the preamble of the proposed rule because at the time there was no facility licensed to accept radioactively contaminated waste oil for disposal other than LLW disposal facilities. Two commenters suggested that "site" be defined as the region "within the site boundary," and one of these suggested that the site boundary be further defined in order to provide consistency in the interpretation of "onsite" disposals.

"Onsite" in normal usage means "within the site boundary." A formal definition is considered unnecessary. Presently, the site or site boundary is

The State of New Jersey wanted the effluents from incineration to be reported in the semiannual effluent report. Effluents from incineration are not exempted from effluent reporting requirements contained in 10 CFR 50.36a(a)(2) and therefore will be reported.

The State of Michigan suggested the Commission mention that other Federal, State, and/or local regulations must be complied with. This provision was in the proposed rule and remains in the final rule as an amendment to § 20.305(c). This provision is also contained in the existing § 20.2007.

Several other clarifications were suggested by commenters. One commenter suggested clarifying that Appendix I limits be met on an annual average basis only.

Radiological release limits contained in facility technical specifications which implement 10 CFR Part 20 and Part 50, Appendix I contain a range of limits including quarterly limits and instantaneous limits. The rule does not relieve licensees from the obligation to comply with the requirements of the Commission's regulations and §§ 20.305(b)(3) and 20.2004(b)(3) do not supersede the existing limits governing total effluent releases. Accordingly, licensees continue to be required to satisfy the total radiological effluent release limitations set forth in the facility technical specifications.

Another commenter suggested clarification that the rule is not intended to require a cost-benefit analysis pursuant to § 50.34a.

As noted in the proposed rule, licensees are required under § 50.71(e) to periodically update their FSAR, and in so doing, submit descriptions of equipment and procedures to the extent that there have been changes to the

information previously submitted under § 50.34(b)(2)(i) and (b)(3) and § 50.34a. No cost-benefit analysis is required.

Some commenters, including EPA and the State of Michigan, suggested clarifying other applicable requirements such as:

- (1) a RCRA permit may be required for some oils if they exhibit hazardous characteristics even though, at the present time, used oil as a class is not a listed hazardous substance;
- (2) some States do classify used oil as hazardous;
- (3) State requirements governing any incineration may apply requiring case-by-case review by the State; and
- (4) EPA may require a permit for radioactive releases under the Clean Air Act.

Obviously the situation in each State may vary. Also, a number of actions have been recently completed or are under consideration by EPA and the States. Thus, requirements are in a state of flux. The Commission cannot identify all other requirements which may be applicable but can only note that these types of requirements exist and must be carefully considered. As clearly stated in § 20.305(c) and in § 20.2007, this rule in no way affects their applicability.

Two commenters were concerned that the potential applicability of RCRA or State requirements would limit the usefulness of the rule.

If waste oil is classified as mixed waste, it presently may not be disposed of at a LLW burial site. This presents licensees with even more of a problem, particularly if the quantity of oil stored onsite approaches the quantity limits imposed for fire safety. On May 20, 1992 (57 FR 21524), EPA published a notice of a decision not to list used oil destined for disposal as

hazardous waste. However, based on EPA's data published in the Federal Register on September 23, 1991 (56 FR 48000), it appears that although a significant portion of industrial waste oil, like that generated by nuclear power plants, will be identified as hazardous waste through testing for the characteristic of toxicity, more than half of this industrial waste oil will not be identified as hazardous. Thus, a portion, but not all, of the radioactively contaminated waste oil from reactors will be mixed waste. In any given State, it will depend on individual State regulations. Although the burden of meeting RCRA or State requirements may increase the cost of incineration, this alternative would still be expected to be of value.

One commenter objected to the term "limited" in reference to the required changes in the ODCM (Offsite Dose Calculation Manual) which the commenter contends are always extensive.

The Commission recognizes that making any change to the ODCM may involve significant administrative effort. However, the changes required in order to account for the effluents from waste oil incineration are relatively limited - primarily related to the fact that a new point of release may be involved.

Conclusion

As indicated in the responses to the comments, the Commission has decided to adopt the rule as proposed with minor modifications. Because the rule will allow a licensee to adopt a potentially more cost- and risk-effective means of disposing of waste oil while maintaining existing limits on plant effluents, the net impact of this action should be positive. For licensees who elect to process waste oils in this fashion, monitoring and

maintaining records on waste oil disposal activities will be covered by other existing regulatory requirements set forth in Part 20 and Part 50, Appendix I. These requirements are implemented primarily through technical specifications established under § 50.36a. In addition, risks associated with transportation to the LLW disposal facility or other treatment or disposal facility are eliminated and toxic and fire hazards associated with storage would likely be reduced. It should be noted that any solid radioactive residues produced in burning the waste oil would, for purposes of regulation, be treated as any other radioactive solid waste.

Finding of No Significant Environmental Impact: Availability

The Commission has reviewed the environmental assessment and finding of no significant environmental impact published in the Federal Register on August 29, 1988 (53 FR 32917-32919) in connection with the proposed rule. The Commission has also considered the public comments and the changes in the text of the final rule, in particular, the public comments relating to environmental matters and the additional discussion of the environmental impacts prepared in response to those comments. The environmental assessment has been modified to be consistent with the discussion in this preamble concerning the environmental impacts of toxic emissions from burning used oil. The Commission has determined that the public comments, the additional consideration of toxic impacts, and the changes made to the text do not affect the conclusion reached in the earlier finding of no significant impact. The Commission has concluded that this amendment to 10 CFR 20.305 and 20.2004 does not constitute a major Federal action significantly affecting the quality of

the human environment, and, therefore, an environmental impact statement is not required.

The revised environmental assessment and finding of no significant impact on which this determination is based are available for inspection and copying at the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC.

Paperwork Reduction Act Statement

This final rule does not contain a new or amended information collection requirement subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). Existing requirements have been approved by the Office of Management and Budget approval numbers 3150-0011 and 3150-0014.

Regulatory Analysis

The Commission has prepared a regulatory analysis on this final rule. That analysis examines the costs and benefits of the alternative courses of action considered by the Commission. The analysis is available for inspection at the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC. Single copies of the analysis may be obtained from Catherine R. Mattsen, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC, 20555 Telephone (301) 492-3638.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule does not have a significant economic impact on a substantial number of small entities. This rule only affects nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121.

Backfit Analysis

The NRC has determined that the backfit rule, 10 CFR 50.109, does not apply to this final rule and, therefore, that a backfit analysis is not required for this final rule, because these amendments do not involve any provisions which would impose backfits as defined in 10 CFR 50.109(a)(1).

List of Subjects in 10 CFR Part 20

Byproduct material, Criminal penalty, Licensed material, Nuclear materials, Nuclear power plants and reactors, Occupational safety and health, Packaging and containers, Radiation protection, Reporting and recordkeeping requirements, Source material, Special nuclear material, Waste treatment and disposal.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974,

as amended, and 5 U.S.C. 552 and 553, the NRC is adopting the following amendments to 10 CFR Part 20.

Part 20 - Standards For Protection Against Radiation

1. The authority citation for Part 20 is revised to read as follows:

AUTHORITY: Secs. 53, 63, 65, 81, 103, 104, 161, 182, 186, 68 Stat. 930, 933, 935, 936, 937, 948, 953, 955, as amended (42 U.S.C. 2073, 2093, 2095, 2111, 2133, 2134, 2201, 2232, 2236), secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 20.408 also issued under secs. 135, 141, Pub. L. 97-425, 96 Stat. 2232, 2241 (42 U.S.C. 10155, 10151).

For the purposes of sec. 233, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 20.101, 20.102, 20.103(a), (b), and (f), 20.104(a) and (b), 20.105(b), 20.106(a), 20.201, 20.202(a), 20.205, 20.207, 20.301, 20.303, 20.304, 20.305, 20.1102, 20.1201-20.1204, 20.1206, 20.1207, 20.1208, 20.1301, 20.1302, 20.1501, 20.1502, 20.1601(a) and (d), 20.1602, 20.1603, 20.1701, 20.1704, 20.1801, 20.1802, 20.1901(a), 20.1902, 20.1904, 20.1906, 20.2001, 20.2002, 20.2003, 20.2004, 20.2005(b) and (c), 20.2006, 20.2101-20.2110, 20.2201-20.2206, and 20.2301 are issued under sec. 161b., 68 Stat. 948, as amended, (42 U.S.C. 2201(b)) and § 20.2106(d) is issued under the Privacy Act of 1974, Pub. L. 93-579, 5 U.S.C. 552a; and §§ 20.102, 20.103(e), 20.401-20.407, 20.408(b), 20.409, 20.1102(a)(2) and (4), 20.1204(c), 20.1206(g) and (h), 20.1904(c)(4), 20.1905(c) and (d), 20.2004(b), 20.2005(c), 20.2006(b) - (d),

20.2101 - 20.2103, 20.2104(b) - (d), 20.2105 - 20.2108, and 20.2201 - 20.2207 are issued under sec. 1510, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. Section 20.305 is revised to read as follows:

§ 20.305 Treatment or disposal by incineration.

(a) A licensee may treat or dispose of licensed material by incineration only:

(1) As authorized by paragraph (b) of this section; or

(2) If the material is in a form and concentration specified in § 20.306; or

(3) As specifically approved by the Commission pursuant to § 20.106(b) or § 20.302.

(b)(1) Waste oils (petroleum derived or synthetic oils used principally as lubricants, coolants, hydraulic or insulating fluids, or metalworking oils) that have been radioactively contaminated in the course of the operation or maintenance of a nuclear power reactor licensed under Part 50 of this chapter may be incinerated on the site where generated provided that the total radioactive effluents from the facility, including the effluents from such incineration, conform to the requirements of Appendix I to Part 50 of this chapter and the effluent release limits contained in applicable license conditions other than effluent limits specifically related to incineration of waste oil. The licensee shall report any changes or additions to the information supplied under §§ 50.34 and 50.34a of this chapter associated with this incineration pursuant to § 50.71 of this chapter, as appropriate.

The licensee shall also follow the procedures of § 50.59 of this chapter with respect to such changes to the facility or procedures.

(2) Solid residues produced in the process of incinerating waste oils must be disposed of as provided by § 20.301.

(3) The provisions of this section authorize onsite waste incineration under the terms of this section and supersede any provision in an individual plant license or technical specification that may be inconsistent.

(c) Nothing in paragraph (b) of this section relieves the licensee from complying with other applicable Federal, State, and local regulations governing any other toxic or hazardous property of these materials.

3. Section 20.2004 is revised to read as follows:

§ 20.2004 Treatment or disposal by incineration.

(a) A licensee may treat or dispose of licensed material by incineration only:

(1) As authorized by paragraph (b) of this section; or

(2) If the material is in a form and concentration specified in § 20.2005; or

(3) As specifically approved by the Commission pursuant to § 20.2002.

(b)(1) Waste oils (petroleum derived or synthetic oils used principally as lubricants, coolants, hydraulic or insulating fluids, or metalworking oils) that have been radioactively contaminated in the course of the operation or maintenance of a nuclear power reactor licensed under Part 50 of this chapter may be incinerated on the site where generated provided that the total

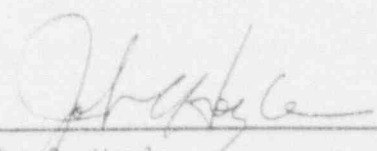
radioactive effluents from the facility, including the effluents from such incineration, conform to the requirements of Appendix I to Part 50 of this chapter and the effluent release limits contained in applicable license conditions other than effluent limits specifically related to incineration of waste oil. The licensee shall report any changes or additions to the information supplied under §§ 50.34 and 50.34a of this chapter associated with this incineration pursuant to § 50.71 of this chapter, as appropriate. The licensee shall also follow the procedures of § 50.59 of this chapter with respect to such changes to the facility or procedures.

(2) Solid residues produced in the process of incinerating waste oils must be disposed of as provided by § 20.2001.

(3) The provisions of this section authorize onsite waste oil incineration under the terms of this section and supersede any provision in an individual plant license or technical specification that may be inconsistent.

Dated at Rockville, Maryland this 15th day of December 1992.

For the Nuclear Regulatory Commission.



John C. Hoyle
Acting Secretary of the Commission