

AC 14-2  
PDR  
049

NOV 24 1992

MEMORANDUM FOR: David L. Meyer, Chief, RDPB/ADM  
FROM: Bill M. Morris, Director, DRA/RES  
SUBJECT: IMPLEMENTATION OF COMMISSION ACTION: NOTICE OF FINAL  
RULEMAKING ON DISPOSAL OF WASTE OIL BY INCINERATION AND  
FINAL ACTION ON PRM-20-15

By memorandum dated November 2, 1992, the Secretary of the Commission indicated that the Commission (with all Commissioners agreeing) has approved publication of the final rule amending 10 CFR Part 20, "Disposal of Waste Oil by Incineration," set out in SECY-92-288.

Please implement the Commission's action by arranging for publication of the enclosed final rule in the Federal Register. The effective date of the rule is 30 days after publication.

Enclosed is a marked-up copy of the Federal Register Notice. The changes are as provided to the Secretary in an October 15, 1992 memo and one other change, the addition of a reference to the Energy Policy Act of 1992 in keeping with a general directive of the Commission with regard to the new legislation.

Also enclosed is a Congressional letter package for transmittal to OCA and two copies of the public announcement for transmittal to OPA.

In addition, enclosed are copies of the environmental assessment and finding of no significant impact and the regulatory analysis for transmittal to the PDR.

Bill M. Morris, Director  
Division of Regulatory Applications  
Office of Nuclear Regulatory Research

Enclosures:

1. Original FR Notice and two  
Copies of FR Notice
2. Marked-up Copy of FR Notice
3. Congressional Letter Package
4. Environmental Assessment
5. Regulatory Analysis
6. Two Copies of the Public  
Announcement

Distribution: [Meyer.MEM]  
DACool/RPHEB rf  
Circ/Chron  
BMMorris  
FACostanzi  
RAMEck  
CMattsen

\*See attached for previous concurrences.

Offc:	RPHEB:DRA	RPHEB:DRA	RPHEB:DRA	DD:DRA:RES	D:DRA:RES
Name:	CMattsen:lc*	RAMEck*	DACool*	FACostanzi	BMMorris
Date:	11/16/92	11/16/92	11/16/92	11/17/92	11/19/92

OFFICIAL RECORD COPY

9302040071 930129  
PDR PR  
20 57FR57649 PDR

11/6/92



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

NOV 24 1992

MEMORANDUM FOR: David L. Meyer, Chief, RDRB/ADM  
FROM: Bill M. Morris, Director, DRA/RES  
SUBJECT: IMPLEMENTATION OF COMMISSION ACTION: NOTICE OF FINAL  
RULEMAKING ON DISPOSAL OF WASTE OIL BY INCINERATION AND  
FINAL ACTION ON PRM-20-15

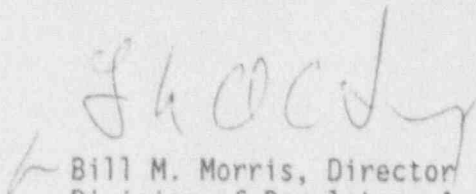
By memorandum dated November 2, 1992, the Secretary of the Commission indicated that the Commission (with all Commissioners agreeing) has approved publication of the final rule amending 10 CFR Part 20, "Disposal of Waste Oil by Incineration," set out in SECY-92-288.

Please implement the Commission's action by arranging for publication of the enclosed final rule in the Federal Register. The effective date of the rule is 30 days after publication.

Enclosed is a marked-up copy of the Federal Register Notice. The changes are as provided to the Secretary in an October 15, 1992 memo and one other change, the addition of a reference to the Energy Policy Act of 1992 in keeping with a general directive of the Commission with regard to the new legislation.

Also enclosed is a Congressional letter package for transmittal to OCA and two copies of the public announcement for transmittal to OPA.

In addition, enclosed are copies of the environmental assessment and finding of no significant impact and the regulatory analysis for transmittal to the PDR.

  
Bill M. Morris, Director  
Division of Regulatory Applications  
Office of Nuclear Regulatory Research

Enclosures:

1. Original FR Notice and two  
Copies of FR Notice
2. Marked-up Copy of FR Notice
3. Congressional Letter Package
4. Environmental Assessment
5. Regulatory Analysis
6. Two Copies of the Public  
Announcement

Enclosure 1

Original FR Notice and Two  
Copies of FR Notice

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



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.<sup>1</sup> 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.

---

<sup>1</sup>Environmental 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 1664; 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).<sup>2</sup> 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

---

<sup>2</sup>PEDCo 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,<sup>3</sup> 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

---

<sup>3</sup>EPA (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)<sup>4</sup> 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

---

<sup>4</sup>Copies of NURFGs 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

defined in the individual technical specifications for each license. However, the rule has limited the incineration to the site where the waste oil is generated, in part so that any releases of radioactive material would be covered by the effluent limits in the technical specifications established under Part 20 and Appendix I to Part 50. The licensee's decision on the specific location for incineration will depend on its ability to demonstrate compliance with those limits applicable to releases of effluents to unrestricted areas. The provision in § 20.305(b)(3) (or § 20.2004(b)(3)), which states that § 20.305 (or § 20.2004) supersedes inconsistent license conditions or technical specifications, is primarily intended to eliminate the need for amendment of license conditions or technical specifications to identify any new release points or specific sampling methods and to remove any restrictions from licensees already authorized to incinerate oil which would not otherwise be applicable under this rule.

Three commenters suggested the alternative of using mobile incinerators. One commenter thought it should be clarified that options other than those mentioned in the proposed rule would be acceptable including also central station power plant boilers.

The preamble to the proposed rule mentioned the options of use of an existing auxiliary boiler or incinerator or an incinerator constructed specifically for the purpose of burning waste oil. This was merely to illustrate the range of options which may be involved, not to limit the options. Nothing in the rule would restrict the use of central station power plant boilers or mobile incinerators if they are onsite. The use of this type of equipment at the site of a licensed nuclear reactor would be governed by the reactor license issued under 10 CFR Part 50.

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 a 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, 5546).

Section 20.408 also issued under secs. 135, 141, Pub. L. 97-425, 96 Stat. 2232, 2241 (42 U.S.C. 10155, 10161).

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. 1610, 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 \_\_\_\_\_ day of \_\_\_\_\_ 1992.

For the Nuclear Regulatory Commission.

\_\_\_\_\_  
Samuel J. Chilk,  
Secretary of the Commission.

Enclosure 2

Marked-up Copy of FR Notice

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 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 Managemer. 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.<sup>1</sup> Also, there is considerable incentive for the licensee to maintain high

---

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

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 [~~destined for disposal~~] 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 [~~under development~~]. 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.

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, and 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).<sup>2</sup> 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

---

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



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 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 [~~destined for disposal~~] 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,<sup>3</sup> 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 increase in energy recovery over the practice of solidification and burial at

---

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

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)<sup>4</sup> 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 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

---

<sup>4</sup>Copies 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.

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 defined in the individual technical specifications for each license. However, the rule has limited the incineration to the site where the waste oil is generated, in part so that any releases of radioactive material would be covered by the effluent limits in the technical specifications established under Part 20 and Appendix I to Part 50. The licensee's decision on the specific location for incineration will depend on its ability to demonstrate

compliance with those limits applicable to releases of effluents to unrestricted areas. The provision in § 20.305(b)(3) (or § 20.2004(b)(3)), which states that § 20.305 (or § 20.2004) supersedes inconsistent license conditions or technical specifications, is primarily intended to eliminate the need for amendment of license conditions or technical specifications to identify any new release points or specific sampling methods and to remove any restrictions from licensees already authorized to incinerate oil which would not otherwise be applicable under this rule.

Three commenters suggested the alternative of using mobile incinerators. One commenter thought it should be clarified that options other than those mentioned in the proposed rule would be acceptable including also central station power plant boilers.

The preamble to the proposed rule mentioned the options of use of an existing auxiliary boiler or incinerator or an incinerator constructed specifically for the purpose of burning waste oil. This was merely to illustrate the range of options which may be involved, not to limit the options. Nothing in the rule would restrict the use of central station power plant boilers or mobile incinerators if they are onsite. The use of this type of equipment at the site of a licensed nuclear reactor would be governed by the reactor license issued under 10 CFR Part 50.

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, 5546).

Section 20.408 also issued under secs. 135, 141, Pub. L. 97-425, 96 Stat. 2232, 2241 (42 U.S.C. 10155, 10161).

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. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. Section 20.30<sup>r</sup> 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 \_\_\_\_\_ day of \_\_\_\_\_ 1992.

For the Nuclear Regulatory Commission.

---

Samuel J. Chilk,

Secretary of the Commission.



Enclosure 3

Congressional Letter Package



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

The Honorable Peter H. Kostmayer, Chairman  
Subcommittee on Energy and the Environment  
Committee on Interior and Insular Affairs  
United States House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

The Nuclear Regulatory Commission has sent to the Office of the Federal Register for publication the enclosed final amendment to the Commission's rules in 10 CFR Part 20. The amendment allows nuclear power reactor licensees to incinerate, onsite, slightly contaminated waste oils without the need for a specific license amendment. These operations will be subject to continued compliance with existing overall plant discharge limits. Thus, this action does not constitute a "below regulatory concern" action. The intent of the rule is to provide a potentially cost effective and environmentally sound method for disposal of this category of waste other than burial at a licensed low-level waste disposal site. This rule was initiated in response to a petition for rulemaking (PRM-20-15) submitted by the Edison Electric Institute and the Utility Nuclear Waste Management Group.

Sincerely,

Dennis K. Rathbun, Director  
Office of Congressional Affairs

Enclosure:  
Final Amendment/10 CFR Part 20

cc: Representative John J. Rhodes

The Honorable Peter H. Kostmayer, Chairman  
Subcommittee on Energy and the Environment  
Committee on Interior and Insular Affairs  
United States House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

The Nuclear Regulatory Commission has sent to the Office of the Federal Register for publication the enclosed final amendment to the Commission's rules in 10 CFR Part 20. The amendment allows nuclear power reactor licensees to incinerate, onsite, slightly contaminated waste oils without the need for a specific license amendment. These operations will be subject to continued compliance with existing overall plant discharge limits. Thus, this action does not constitute a "below regulatory concern" action. The intent of the rule is to provide a potentially cost effective and environmentally sound method for disposal of this category of waste other than burial at a licensed low-level waste disposal site. This rule was initiated in response to a petition for rulemaking (PRM-20-15) submitted by the Edison Electric Institute and the Utility Nuclear Waste Management Group.

Sincerely,

Dennis K. Rathbun, Director  
Office of Congressional Affairs

Enclosure:  
Final Amendment/10 CFR Part 20

cc: Representative John J. Rhodes

Distribution: [CONGRESS.LET]  
DACool/RPHEB rf  
Circ/Chron  
DRathbun, OCA  
JMTaylor, EDO  
EBeckjord  
CHeltemes  
BMorris  
FCostanzi  
RAMEck  
CMattsen

Off:	RPHEB:DRA	RPHEB:DRA	RPHEB:DRA	DD:GIR:RES	DD:GIR:RES	DD:GIR:RES	D:RES	EDO	D OCA
Name:	CMattsen:ic	RAMEck	DACool	FCostanzi	BMorris	CJHeltemes	EBeckjord	JMTaylor	Rathbun
Date:	11/17/92	11/17/92	11/17/92	11/17/92	11/17/92	11/20/92	11/23/92	<del>11/23/92</del>	1/ /92

OFFICIAL RECORD COPY



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

The Honorable Philip R. Sharp, Chairman  
Subcommittee on Energy and Power  
Committee on Energy and Commerce  
United States House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

The Nuclear Regulatory Commission has sent to the Office of the Federal Register for publication the enclosed final amendment to the Commission's rules in 10 CFR Part 20. The amendment allows nuclear power reactor licensees to incinerate, onsite, slightly contaminated waste oils without the need for a specific license amendment. These operations will be subject to continued compliance with existing overall plant discharge limits. Thus, this action does not constitute a "below regulatory concern" action. The intent of the rule is to provide a potentially cost effective and environmentally sound method for disposal of this category of waste other than burial at a licensed low-level waste disposal site. This rule was initiated in response to a petition for rulemaking (PRM-20-15) submitted by the Edison Electric Institute and the Utility Nuclear Waste Management Group.

Sincerely,

Dennis K. Rathbun, Director  
Office of Congressional Affairs

Enclosure:  
Final Amendment/10 CFR Part 20

cc: Representative Carlos J. Moorhead



Off:	RPHEB-DRA	RPHEB-DRA	RPHEB-DRA	DD-TRA:RES	D-TRA:RES	DD-GIR:RES	D-RES	<del>DDO</del>	D-OCA
Name:	CMattsen:lc	RAMeck	DACool	FCostanzi	EMorris	CJHeltemes	EBeckjord	<del>JMStaylor</del>	Rathbun
Date:	/ / 92	11/17/92	11/17/92	11/17/92	11/17/92	11/23/92	11/23/92	<del>11/23/92</del>	/ / 92

OFFICIAL RECORD COPY



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

The Honorable Bob Graham, Chairman  
Subcommittee on Nuclear Regulation  
Committee on Environment and Public Works  
United States Senate  
Washington, DC 20510

Dear Mr. Chairman:

The Nuclear Regulatory Commission has sent to the Office of the Federal Register for publication the enclosed final amendment to the Commission's rules in 10 CFR Part 20. The amendment allows nuclear power reactor licensees to incinerate, onsite, slightly contaminated waste oils without the need for a specific license amendment. These operations will be subject to continued compliance with existing overall plant discharge limits. Thus, this action does not constitute a "below regulatory concern" action. The intent of the rule is to provide a potentially cost effective and environmentally sound method for disposal of this category of waste other than burial at a licensed low-level waste disposal site. This rule was initiated in response to a petition for rulemaking (PRM-20-15) submitted by the Edison Electric Institute and the Utility Nuclear Waste Management Group.

Sincerely,

Dennis K. Rathbun, Director  
Office of Congressional Affairs

Enclosure:  
Final Amendment/10 CFR Part 20

cc: Senator Alton K. Simpson

The Honorable Bob Graham, Chairman  
Subcommittee on Nuclear Regulation  
Committee on Environment and Public Works  
United States Senate  
Washington, DC 20510

Dear Mr. Chairman:

The Nuclear Regulatory Commission has sent to the Office of the Federal Register for publication the enclosed final amendment to the Commission's rules in 10 CFR Part 20. The amendment allows nuclear power reactor licensees to incinerate, onsite, slightly contaminated waste oils without the need for a specific license amendment. These operations will be subject to continued compliance with existing overall plant discharge limits. Thus, this action does not constitute a "below regulatory concern" action. The intent of the rule is to provide a potentially cost effective and environmentally sound method for disposal of this category of waste other than burial at a licensed low-level waste disposal site. This rule was initiated in response to a petition for rulemaking (PRM-20-15) submitted by the Edison Electric Institute and the Utility Nuclear Waste Management Group.

Sincerely,

Dennis K. Rathbun, Director  
Office of Congressional Affairs

Enclosure:  
Final Amendment/10 CFR Part 20

cc: Senator Alan K. Simpson

Distribution: [CONGRESS.LET]  
DACool/RPHEB rf  
Circ/Chron  
DRathbun, OCA  
JMTaylor, EDO  
EBeckjord  
CHeltemes  
BMorris  
FCostanzi  
RAMEck  
CMattsen

Off:	RPHEB:DRA	<i>RM</i>	<i>RM</i>	<i>RM</i>	<i>RM</i>	<i>RM</i>	<i>RM</i>	<i>RM</i>	<i>RM</i>	<i>RM</i>
Name:	CMattsen:lc	RPHEB:DRA	RPHEB:DRA	DD:RA:RES	D:RA:RES	DD:RA:RES	D:RES	EDO	D:OCA	
Date:	/ /92	RAMEck	DACool	FCostanzi	BMorris	CJHeltemes	EBeckjord	JMTaylor	Rathbun	
		11/17/92	11/17/92	11/17/92	11/17/92	11/20/92	11/23/92	11/17/92	11/17/92	

OFFICIAL RECORD COPY

Enclosure 4

Environmental Assessment



## ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

### AMENDMENT TO 10 CFR 20.305 and 20.2004

### DISPOSAL OF WASTE OIL BY INCINERATION

The Nuclear Regulatory Commission is amending its regulations to allow power reactor licensees to incinerate contaminated waste oil onsite without obtaining the specific approval of the Commission through a license amendment.

#### Environmental Assessment

##### Identification of Action

Present §§ 20.305 and 20.2004 forbid the incineration of any licensed material, except that specifically exempted by §§ 20.306 and 20.2005, without the specific approval of the Commission. This action amends §§ 20.305 and 20.2004 to allow power reactor licensees to incinerate slightly contaminated waste oil onsite without prior approval. It does not exempt the effluents from this process from the requirements established under Part 20 and Part 50, particularly, effluent limits and effluent monitoring and reporting.

##### Need for the Action

The Edison Electric Institute and the Utility Nuclear Waste Management Group petitioned the Commission (PRM-20-15, dated July 31, 1984) to initiate rule-making to define a level of radioactivity in power-reactor-generated waste oils that would permit disposal of these oils without regard to their

radioactive material content. Previously, the only generically approved method of disposal for low-level radioactively contaminated oil from nuclear power plants involved solidification or immobilization, packaging, and transportation to and burial at a licensed disposal site. The cost of this type of disposal is significant, while the concentrations of contaminants are quite low.

Several power reactor licensees have requested and been granted amendments to their licenses to allow onsite incineration of slightly contaminated waste oil. Others have been interested in doing so.

#### Environmental Impacts of the Action

The primary impact of this rulemaking is to reduce the administrative effort involved in the application for and issuance of amendments to power reactor licenses to allow incineration of waste oil. However, easing these requirements may result in greater amounts of waste oil being incinerated than would otherwise be the case. Thus, the overall impacts of such incineration must be considered.

Some information on the quantities and concentrations of waste oil generated at nuclear power plants was provided in the petition and in a Brookhaven report "Evaluation of Potential Mixed Wastes Containing Lead, Chromium, Used Oil, or Organic Liquids" (NUREG/CR-4730, January 1987). The amounts and concentrations vary considerably from plant to plant and even from year to year at a given plant. The volumes reported were approximately 1000 gal/year

at a PWR and up to 5000 gal/year at a BWR. Since publication of the proposed rule, the Electric Power Research Institute (EPRI) has published another report<sup>1</sup> estimating annual per reactor production at approximately 1000 gallons more than these previous reports. In addition, some utilities have large quantities in storage on site. Concentrations of radioactive contaminants are typically  $10^{-7}$  to  $10^{-6}$   $\mu\text{Ci/ml}$  but can be as high as  $10^{-3}$   $\mu\text{Ci/ml}$  in some cases. Total activity per reactor per year is estimated to average about  $10^{-4}$  Ci. The dominant radionuclides are Mn-54, Co-58, Co-60, Cs-134, and Cs-137. Others reported include Sr-90, Cd-109, Zn-65, and Zr-95. It appears that the bulk of the waste oil generated, in terms of volume, could be incinerated with resultant individual doses of less than 1 mrem/yr. Licensees with license amendments permitting onsite incineration have been able to dispose of most of their waste oils under a technical specification of 0.1% of the total dose limit, which is generally 15 mrem/yr from radioactive iodine and radioactive material in particulate form (in keeping with the guidance contained in Appendix I of Part 50), or 15  $\mu\text{rem/year}$ . This action modifies the restriction against incineration without prior approval contained in §§ 20.305 and 20.2004 to make an exception for waste oil at power reactor sites; however, it does not exempt the resulting effluents from the requirements of Part 20, § 50.36a, and Appendix I of Part 50. These limiting conditions for operation include dose limits for effluents and monitoring and reporting requirements. Although this action may slightly increase actual effluents, the radioactivity in these effluents must be kept within existing

---

<sup>1</sup>Below Regulatory Concern Owners Group: Nonradiological Characterization and Environmental Assessment BRC Waste Prepared by Science Applications International Corporation for the Electric Power Research Institute, EPRI NP-5674, February 1989.

limits for total dose from nuclear power plant effluents which have been determined to satisfy the "as low as is reasonably achievable" criterion.

Impacts from the toxic constituents of used oil may be minimized by onsite incineration and in any case the impacts from toxic emissions are estimated to be insignificant. (See discussion under "Alternatives to the Action.") Potentially, this action might result in reduced storage of waste oil onsite thus reducing the associated fire hazard. Also, risks inherent in transportation will be reduced from those associated with the previously available disposal option of burial at LLW disposal sites. Incineration will not require significant quantities of materials, water, or energy and in some cases may involve the recovery of energy, e.g., when the oil is burned in an auxiliary boiler.

Based on these considerations, this action will not result in a significant effect on the quality of the human environment.

#### Alternatives to the Action

As required by Section 102(2)(E) of NEPA (42 U.S.C. 4322(2)(E)), possible alternatives to the action have been considered. One alternative considered was to defer any action until decisions are made regarding generic BRC rulemaking. However, in keeping with an ongoing Commission moratorium, action on any waste exemption rulemaking has been deferred. It is apparent that the cost to licensees to solidify or immobilize, package, transport, and bury contaminated waste oil at licensed disposal sites is not justified based on

the very limited doses from incineration and the fact that other environmental impacts, if anything, will likely be reduced. Waste oil that is also classified as hazardous waste cannot be sent to low level waste burial grounds but may be a candidate for incineration subject to evolving EPA regulations governing burning of used oil. It is more cost-effective to allow the incineration through rulemaking rather than to continue processing applications for license amendment. For these reasons, this action should be taken rather than delay the relief any further.

Other alternatives were considered which would have granted more of what the petitioners originally requested. However, to allow licensees to use methods other than onsite incineration would require both more complete information and analysis concerning the impacts of using those methods than was submitted by the petitioners, and an NRC decision on a dose criterion for waste oil disposal. Controlled incineration onsite has been demonstrated to be an acceptable technical alternative for disposal of material. Although there is not sufficient information available to preclude allowing any of the other alternatives in the future, incineration appears to be environmentally preferable to the other proposed alternatives.\* Although used oil destined for disposal is not listed as a Federal hazardous waste, it can contain a significant amount of toxic substances consisting of various organic compounds and metals. Although there may be some environmental impact from the toxic nature of used oil for any disposal alternative, incineration at a controlled site is likely to minimize these effects and is preferred by the EPA over land disposal generally. Also, EPA is in the process of developing regulations to control the impact of disposal and recycle of used oil. Even with no



particular controls in place, the organic compounds are largely destroyed by the incineration process. As much as half or more of the metals may be released, but, for the quantities and circumstances of oil burned under this rule, concentrations to which the public may be exposed are not expected to be significant. Incineration at a controlled site assures that the disposal of the ash residue can be controlled appropriately considering both its radiologic and toxic constituents. Nationally, any nonradiological environmental effect of disposal of radioactively contaminated used oil from nuclear power plants would be small compared to that associated with the total quantity of used oil disposed. All power plants in total produce on the order of 300,000 gallons/year of such used oil. (The EPRI document cited above estimated 50,000 cubic feet/year, or 370,000 gallons per year, generated from all existing plants as well as those under construction.) Nationally, vehicle maintenance produces about 700 million gallons/year of used oil and industrial use approximately 400 million gallons/year.

#### Agencies and Persons Consulted

Further consultation has been made with the petitioners (PRM-20-15) concerning this action as a resolution of the petition.

Consideration has also been given to ongoing EPA activities, the 14 comment letters received on the petition, and the Brookhaven report, NUREG/CR-4730.

### Finding of No Significant Impact

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in 10 CFR Part 51, that this amendment to 10 CFR Part 20 to allow the incineration of slightly contaminated waste oil by power reactor licensees onsite will not have a significant effect on the quality of the human environment and that an environmental impact statement is not required. This determination is based on the foregoing environmental assessment performed in accordance with the procedures and criteria in Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions."

## Regulatory Analysis

### Rule to Amend 10 CFR 20.305 and 20.2004

#### DISPOSAL OF WASTE OIL BY INCINERATION

##### 1. Statement of the Problem

The Edison Electric Institute and the Utility Nuclear Waste Management Group petitioned the Commission (PRM-0-15, dated July 31, 1984) to initiate rulemaking to define a level of radioactivity in power reactor-generated waste oils which would permit disposal of these oils without regard to their radioactive material content. This petition responded to Commission views as expressed in the Supplementary Information accompanying publication of 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste" (December 27, 1982; 47 FR 57446). In that statement, the Commission recognized that the establishment of standards for waste for which there is no regulatory concern would be beneficial and would, among other things, reduce disposal and long-term disposal site maintenance costs, help preserve the limited capacity of the regional licensed waste disposal sites for wastes with higher levels of radioactivity, and enhance overall site stability of disposal facilities by reducing the volume of Class A waste. The petitioners suggested that, based on recent Commission decisions, a 1-millirem/yr individual dose limit would be an appropriate basis for establishing a cutoff level for defining those wastes that were "below regulatory concern." Further, the petitioners presented several examples where combinations of radionuclide concentrations and disposal methods for waste oil would satisfy the

1 millirem/yr dose limit and proposed wording to revise 10 CFR Part 20 to reflect these recommendations.

A response to this petition requires a staff determination of the need for a generic rulemaking to allow disposal of power-reactor-generated, slightly contaminated waste oil by means other than by burial at a licensed disposal site. Among the factors that must be considered in this determination are the following:

(1) Current licensing requirements, imposed on each power reactor operator, that limit the release of radioactive materials to the general environment to ALARA levels.

(2) The existence of Commission regulations which permit the use of alternate waste disposal practices subject to license amendment.

(3) All environmental and safety issues associated with storage on site and transportation of waste oil and impacts from toxic constituents of waste oil.

(4) The financial costs and land use requirements associated with disposing of the very small quantities of radioactive material contained in typical waste oil.

(5) The authority of the Environmental Protection Agency (EPA) to regulate the release of both radioactive and non-radioactive materials to the environment.

(6) The authority of the EPA, which assumed Federal Radiation Council responsibilities, to develop Presidential guidance for use by other Federal agencies on acceptable levels of radiation exposure for the general public.

## 2. Objectives

The rule allows nuclear power reactor licensees to incinerate waste oil which has become contaminated from operations associated with nuclear power production. Previously, licensees were afforded the option of obtaining a license amendment to allow them to incinerate waste oil onsite. Allowing incineration through a rule change versus continuing to do so through the license amendment process will make this alternative disposal method available in a more timely manner and with reduced administrative effort for licensees and the NRC.

The environmental impact from the incineration of the oil, which contains generally very low concentrations of radionuclides, is insignificant. Generally, incineration would be expected to result in significant savings in disposal costs. Incineration instead of burial also conserves limited available burial space, reduces risks from the transportation of waste oil (radiological and non-radiological), reduces the fire hazard associated with waste oil storage, and may reduce the impacts from the toxic constituents of waste oil.

## 3. Alternatives

The petitioners requested that the Commission issue a regulation governing the disposal of low-level radioactively contaminated waste oil from nuclear power plants by establishing radionuclide concentrations in waste oil at which disposal may be carried out without regard to the radioactive material content of the waste. The petition suggested an individual exposure



value of 1 millirem per year would be an appropriate criterion on which to base concentration limits. The justification proposed was primarily on a "de minimis" basis; that is, simply that this level of risk is too trivial to be of concern. The term "below regulatory concern" (BRC) has sometimes been used interchangeably with "de minimis"; however, it has also been used in connection with exemptions from specific regulations decided on a cost-benefit basis.

It would be convenient to declare waste oil, contaminated to a sufficiently low level, to be of no regulatory concern, thereby allowing it to be disposable without regard to its radioactive contamination. Although 1 mrem/year is likely to be acceptable, the petitioners have not supplied sufficient information to allow a specific waste stream "below regulatory concern" determination to be made. Also, the Commission has deferred taking any actions to exempt wastes from regulatory control.

In responding to this petition, there were three basic alternative courses of action which could have been taken: to deny the petition, to defer action on the petition, or to initiate the rulemaking process. The staff does not believe that a categorical dismissal of this petition is consistent with either the potential to reduce the hazards associated with storage of waste oil onsite or the need to ensure effective use of licensed low-level waste disposal capacity.

The staff could have deferred action on this specific petition until consideration of a generic rulemaking on BRC waste or until EPA issues standards or guidance on BRC levels of radioactivity. However, neither of these actions are expected to take place in the near term.

The staff recognizes the current problems associated with the disposal of waste oil and believes that a rule change should be made. However, in order for the petition to be granted in full, more information and analysis would be necessary. For example, a more complete characterization of quantities and concentrations of contaminated waste oil would be needed to make a waste stream specific analysis on which to base specific concentration limits. Also, a determination would have to be made on whether the concentrations of radionuclides possible in the ash from incineration or the sludge from recycling would be low enough to allow waste oil processing at unlicensed facilities. Such additional analyses would result in delay and the expenditure of limited resources. The rule will provide the relief requested in the petition commensurate with the information available. The remainder of the petition has been denied without prejudice.

Incineration will be allowed without specific license amendment providing the licensee maintains compliance with the licensee's operating limits based on the requirements of 10 CFR Part 20 and Part 50, Appendix 1. Any other applicable Federal and State statutes would also have to be satisfied.

This action by the Commission would not preclude the petitioner from resubmitting a future request to exempt waste oils or other classes of waste from requirements for disposal at low level waste disposal facilities.

#### 4. Consequences

This rule, which allows utilities the option of disposing of waste oil by onsite incineration, has the potential to affect several attributes, but

only a few significantly. One of those is "Regulatory Efficiency." This action allows utilities an alternative for the disposal of waste oil while not allowing any change in the existing limits of radiation exposure to the public. There also would be no significant change in public health nor occupational exposures. If anything, the decreased risk from no longer transporting the waste oil to licensed land burial sites should result in decreased exposures.

The efficiency results in two ways. First, the utilities will not have to dispose of the waste oil in licensed land burials, but may incinerate it onsite if they so desire, i.e., if it is to their economic advantage to do so. Second, those utilities which want to incinerate the waste oil will not have to apply for a license amendment. Savings could also accrue to both industry and the NRC in their implementation and operation costs as a result of the above. Licensees would only take advantage of this rule if it was in their best economic interest, i.e., with savings resulting to them. The NRC will save by issuing the rule as opposed to handling each license amendment separately.

Information provided by the petitioners and in a Brookhaven National Laboratory Report, "Evaluation of Potential Mixed Wastes Containing Lead, Chromium, Used Oil, or Organic Liquids," (NUREG/CR-4730, January 1987) indicates that, on average, an operating PWR produces approximately 1000 gallons per year of contaminated waste oil, and an operating BWR produces

approximately 3500-5000 gal/yr<sup>1</sup>. Reported contamination levels are usually in the range of 10<sup>-7</sup> to 10<sup>-5</sup> µCi/ml, although higher levels have been reported. The principal radioisotopes present in these waste oils include the usual activation and fission products such as Co-58, Co-60, Mn-54, Cs-134, Cs-137.

Because of restrictions imposed on the disposal of oil wastes in licensed land burial grounds, oil wastes must be stabilized prior to transport to these sites; sorption and solidification are the prevalent treatment methods. Several plants are storing waste oils on an interim basis pending a decision on ultimate disposal.

According to both the BNL report and information provided by the petitioners, solidification of oil wastes effectively doubles the volume of the waste requiring disposal while sorption can increase waste volumes by as much as a factor of 6.

If directly released to the environment, a typical reactor would, on average, discharge a total of 10<sup>-4</sup> curies of radioactivity per year via the waste oil pathway. This quantity is a fraction of typical releases in liquid effluents and atmospheric releases allowed under existing plant discharge limits. According to the petitioners, most waste oils could be incinerated without resulting in (conservatively calculated) doses exceeding 1 mrem/year. In fact, those licensees who have incinerated waste oil in compliance with a site-specific amendment to their license have kept these effluents to 0.1 percent of their technical specifications for total doses from effluents.

---

<sup>1</sup>A more recent report published by Electric Power Research Institute (EPRI) estimated typical volumes to be 1000 gal/yr higher than those in NUREG/CR-4730: "Below Regulatory Concern Owners Group: Nonradiological Characterization and Environmental Assessment of BRC Waste," prepared by Science Applications International Corporation for the Electric Power Research Institute, EPRI NP-5674, February 1989.

In addition, under this rulemaking, the effluents from the incineration of waste oil would be accounted for under existing operating limits contained in Part 50, Appendix I. Thus, the addition of the small quantities of radioactive material present in waste oil to normal plant effluents should have a negligible impact on public health or environmental quality.

Additionally, other environmental impacts of waste oil disposal will likely be slightly reduced. These include the risks inherent in transportation (radiological and non-radiological), the fire or leakage hazards associated with storage of waste oil, and possibly the impacts from toxic constituents depending on the specific equipment and controls used and the status of EPA regulations intended to control these impacts.

Before presenting the industry cost estimates, it should be noted that there is no accurate way to determine the total industry's potential savings, since each licensee's particular situation is different, and it is not known how many plants will take advantage of the rule.

A licensee's implementation costs decrease if it decides to take advantage of the rule, because it saves the cost of having to prepare a license amendment. It is estimated that a typical, uncomplicated technical specification change costs a licensee about \$18,000. (This and all other values are in 1988 dollars.) (Cf. Abstract 2.2.1, "Generic Cost Estimates," NUREG/CR-4627, Rev. 1, 1989.)

As to operating costs, one licensee had estimated that it could save somewhere between \$3,300 and \$12,600 per year by incinerating its waste oil as opposed to burying it. These costs were based upon values of 220 to 825 gallons of waste oil disposal per year, with the per gallon cost being about \$15.



The solidification method assumed in this estimate was more cost-effective than that used in the original estimates of the petitioners in 1983 in that it involved lower volume increases. The petitioners' estimates of disposal costs saved were \$15-30/gal. The actual cost for an individual licensee will depend on the solidification method used, labor rates, distance to the LLW burial ground, and burial fees. The escalating costs of burial including the additions of surcharges could cause significant increases in the cost of disposal at a LLW burial facility thus resulting in increases in potential savings from incinerating waste oil. If we assume \$15/gal as the minimum amount saved and assume (based on the Brookhaven National Laboratory report) that an average PWR plant produces about 1000 gallons of slightly contaminated waste oil per year, its corresponding savings would be at least \$15,000 per year.<sup>2</sup> If an average remaining life of 30 years is assumed, along with a 5 percent annual real discount rate, a PWR's lifetime savings would be \$231,000. If the \$18,000 amendment cost savings are included, the total savings would be about \$250,000 per PWR.

With respect to a BWR, the range of waste oil produced is estimated at 3500 to 5000 gallons per year. Again, using similar assumptions, the annual savings range from \$52,500 to \$75,000, with the discounted operating lifetime savings ranging from \$808,500 to \$1,155,000. When the implementation cost savings are included, the totals become \$826,500 to \$1,173,000 per BWR.

Because of a change in EPA regulations governing the detection of toxic constituents (55 FR 11798; March 29, 1990), a larger portion of waste oil may

---

<sup>2</sup>The estimates for cost savings in this section assume the volumes of waste oil generated as estimated in the Brookhaven report (NUREG/CR-4730). Other data (referenced in footnote 1) suggest higher typical volumes. If those volumes are more representative, savings in disposal costs would be proportionately greater.

be classified as hazardous waste and, if radioactively contaminated, as mixed waste. This rule would allow incineration for all waste oils without affecting the applicability of other Federal, State, or local requirements. EPA regulations governing hazardous waste and used oil recycle and disposal are complex and have been undergoing change as this rule was developed. This introduces cost impacts on the various alternatives which the Commission cannot adequately assess.

Again, because of each plant's individual situation, and the fact that this rule is only an option, the estimates of disposal cost savings are only illustrative. With respect to other potential industry operating costs, a licensee will need to provide the NRC with changes to the Offsite Dose Calculations Manual and changes in equipment and procedures whether the licensee makes use of the rule, or applies for a license amendment to incinerate the waste oil; therefore, these costs will be the same in both cases and do not need to be included in this analysis. A key point which cannot be overlooked, however, is that permitting use of this alternative disposal option could conserve limited low-level burial ground space.

This rule will also reduce NRC's potential workload in processing individual requests for specific license amendments to permit incineration. The estimated NRC cost of a typical, uncomplicated, technical specification change is \$11,000. (Cf. Abstract 5.1, "General Cost Estimates," NUREG/CR-4627, Rev. 1, 1989.) Further, as noted above, the NRC is to receive modifications or additions to the licensee's Offsite Dose Calculations Manual and changes in equipment and procedures if the licensee plans to incinerate the waste oil through use of the rule or a license amendment. Hence the only difference in the NRC's cost is \$11,000 saved per licensee under the rule.

Because the rule allows a licensee to adopt a potentially more cost- and risk-effective means of disposing of this class of waste while maintaining existing limits on plant effluents, the net impact of this action is positive.

5. Decision Rationale

The Commission has yet to determine what action should be taken in regard to a generic rulemaking on BRC wastes and a decision in this area is not expected for some time. However, a decision on a dose criterion need not be part of this action. A simpler rule change can provide more timely relief from the costs of disposal of contaminated waste oil. The incineration of waste oil onsite will not add significantly to the environmental impacts of reactor operations, may in fact be environmentally preferable, and could result in savings in disposal costs and preservation of LLWB site capacity.

6) Implementation

a) Schedule for Implementation

The final rule will be effective 30 days after publication in the Federal Register.

b) Relationship to Other Existing or Proposed Requirements

Rule could be superseded by future actions on generic waste exemptions.

Enclosure 5  
Regulatory Analysis

## Regulatory Analysis

### Rule to Amend 10 CFR 20.305 and 20.2004

#### DISPOSAL OF WASTE OIL BY INCINERATION

##### 1. Statement of the Problem

The Edison Electric Institute and the Utility Nuclear Waste Management Group petitioned the Commission (PRM-20-15, dated July 31, 1984) to initiate rulemaking to define a level of radioactivity in power reactor-generated waste oils which would permit disposal of these oils without regard to their radioactive material content. This petition responded to Commission views as expressed in the Supplementary Information accompanying publication of 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste" (December 27, 1982; 47 FR 57446). In that statement, the Commission recognized that the establishment of standards for waste for which there is no regulatory concern would be beneficial and would, among other things, reduce disposal and long-term disposal site maintenance costs, help preserve the limited capacity of the regional licensed waste disposal sites for wastes with higher levels of radioactivity, and enhance overall site stability of disposal facilities by reducing the volume of Class A waste. The petitioners suggested that, based on recent Commission decisions, a 1-millirem/yr individual dose limit would be an appropriate basis for establishing a cutoff level for defining those wastes that were "below regulatory concern." Further, the petitioners presented several examples where combinations of radionuclide concentrations and disposal methods for waste oil would satisfy the



1 milli:em/yr dose limit and proposed wording to revise 10 CFR Part 20 to reflect these recommendations.

A response to this petition requires a staff determination of the need for a generic rulemaking to allow disposal of power-reactor-generated, slightly contaminated waste oil by means other than by burial at a licensed disposal site. Among the factors that must be considered in this determination are the following:

(1) Current licensing requirements, imposed on each power reactor operator, that limit the release of radioactive materials to the general environment to ALARA levels.

(2) The existence of Commission regulations which permit the use of alternate waste disposal practices subject to license amendment.

(3) All environmental and safety issues associated with storage on site and transportation of waste oil and impacts from toxic constituents of waste oil.

(4) The financial costs and land use requirements associated with disposing of the very small quantities of radioactive material contained in typical waste oil.

(5) The authority of the Environmental Protection Agency (EPA) to regulate the release of both radioactive and non-radioactive materials to the environment.

(6) The authority of the EPA, which assumed Federal Radiation Council responsibilities, to develop Presidential guidance for use by other Federal agencies on acceptable levels of radiation exposure for the general public.

## 2. Objectives

The rule allows nuclear power reactor licensees to incinerate waste oil which has become contaminated from operations associated with nuclear power production. Previously, licensees were afforded the option of obtaining a license amendment to allow them to incinerate waste oil onsite. Allowing incineration through a rule change versus continuing to do so through the license amendment process will make this alternative disposal method available in a more timely manner and with reduced administrative effort for licensees and the NRC.

The environmental impact from the incineration of the oil, which contains generally very low concentrations of radionuclides, is insignificant. Generally, incineration would be expected to result in significant savings in disposal costs. Incineration instead of burial also conserves limited available burial space, reduces risks from the transportation of waste oil (radiological and non-radiological), reduces the fire hazard associated with waste oil storage, and may reduce the impacts from the toxic constituents of waste oil.

## 3. Alternatives

The petitioners requested that the Commission issue a regulation governing the disposal of low-level radioactively contaminated waste oil from nuclear power plants by establishing radionuclide concentrations in waste oil at which disposal may be carried out without regard to the radioactive material content of the waste. The petition suggested an individual exposure

value of 1 millirem per year would be an appropriate criterion on which to base concentration limits. The justification proposed was primarily on a "de minimis" basis; that is, simply that this level of risk is too trivial to be of concern. The term "below regulatory concern" (BRC) has sometimes been used interchangeably with "de minimis"; however, it has also been used in connection with exemptions from specific regulations decided on a cost-benefit basis.

It would be convenient to declare waste oil, contaminated to a sufficiently low level, to be of no regulatory concern, thereby allowing it to be disposable without regard to its radioactive contamination. Although 1 mrem/year is likely to be acceptable, the petitioners have not supplied sufficient information to allow a specific waste stream "below regulatory concern" determination to be made. Also, the Commission has deferred taking any actions to exempt wastes from regulatory control.

In responding to this petition, there were three basic alternative courses of action which could have been taken: to deny the petition, to defer action on the petition, or to initiate the rulemaking process. The staff does not believe that a categorical dismissal of this petition is consistent with either the potential to reduce the hazards associated with storage of waste oil onsite or the need to ensure effective use of licensed low-level waste disposal capacity.

The staff could have deferred action on this specific petition until consideration of a generic rulemaking on BRC waste or until EPA issues standards or guidance on BRC levels of radioactivity. However, neither of these actions are expected to take place in the near term.

The staff recognizes the current problems associated with the disposal of waste oil and believes that a rule change should be made. However, in order for the petition to be granted in full, more information and analysis would be necessary. For example, a more complete characterization of quantities and concentrations of contaminated waste oil would be needed to make a waste stream specific analysis on which to base specific concentration limits. Also, a determination would have to be made on whether the concentrations of radionuclides possible in the ash from incineration or the sludge from recycling would be low enough to allow waste oil processing at unlicensed facilities. Such additional analyses would result in delay and the expenditure of limited resources. The rule will provide the relief requested in the petition commensurate with the information available. The remainder of the petition has been denied without prejudice.

Incineration will be allowed without specific license amendment providing the licensee maintains compliance with the licensee's operating limits based on the requirements of 10 CFR Part 20 and Part 50, Appendix I. Any other applicable Federal and State statutes would also have to be satisfied.

This action by the Commission would not preclude the petitioner from resubmitting a future request to exempt waste oils or other classes of waste from requirements for disposal at low level waste disposal facilities.

#### 4. Consequences

This rule, which allows utilities the option of disposing of waste oil by onsite incineration, has the potential to affect several attributes, but

only a few significantly. One of those is "Regulatory Efficiency." This action allows utilities an alternative for the disposal of waste oil while not allowing any change in the existing limits of radiation exposure to the public. There also would be no significant change in public health nor occupational exposures. If anything, the decreased risk from no longer transporting the waste oil to licensed land burial sites should result in decreased exposures.

The efficiency results in two ways. First, the utilities will not have to dispose of the waste oil in licensed land burials, but may incinerate it onsite if they so desire, i.e., if it is to their economic advantage to do so. Second, those utilities which want to incinerate the waste oil will not have to apply for a license amendment. Savings could also accrue to both industry and the NRC in their implementation and operation costs as a result of the above. Licensees would only take advantage of this rule if it was in their best economic interest, i.e., with savings resulting to them. The NRC will save by issuing the rule as opposed to handling each license amendment separately.

Information provided by the petitioners and in a Brookhaven National Laboratory Report, "Evaluation of Potential Mixed Wastes Containing Lead, Chromium, Used Oil, or Organic Liquids," (NUREG/CR-4730, January 1987) indicates that, on average, an operating PWR produces approximately 1000 gallons per year of contaminated waste oil, and an operating BWR produces



approximately 3500-5000 gal/yr<sup>1</sup>. Reported contamination levels are usually in the range of  $10^{-7}$  to  $10^{-6}$   $\mu\text{Ci/ml}$ , although higher levels have been reported. The principal radioisotopes present in these waste oils include the usual activation and fission products such as Co-58, Co-60, Mn-54, Cs-134, Cs-137.

Because of restrictions imposed on the disposal of oil wastes in licensed land burial grounds, oil wastes must be stabilized prior to transport to these sites; sorption and solidification are the prevalent treatment methods. Several plants are storing waste oils on an interim basis pending a decision on ultimate disposal.

According to both the BNL report and information provided by the petitioners, solidification of oil wastes effectively doubles the volume of the waste requiring disposal while sorption can increase waste volumes by as much as a factor of 6.

If directly released to the environment, a typical reactor would, on average, discharge a total of  $10^{-4}$  curies of radioactivity per year via the waste oil pathway. This quantity is a fraction of typical releases in liquid effluents and atmospheric releases allowed under existing plant discharge limits. According to the petitioners, most waste oils could be incinerated without resulting in (conservatively calculated) doses exceeding 1 mrem/year. In fact, those licensees who have incinerated waste oil in compliance with a site-specific amendment to their license have kept these effluents to 0.1 percent of their technical specifications for total doses from effluents.

---

<sup>1</sup>A more recent report published by Electric Power Research Institute (EPRI) estimated typical volumes to be 1000 gal/yr higher than those in NUREG/CR-4730: "Below Regulatory Concern Owners Group: Nonradiological Characterization and Environmental Assessment of BRC Waste," prepared by Science Applications International Corporation for the Electric Power Research Institute, EPRI NP-5674, February 1989.

In addition, under this rulemaking, the effluents from the incineration of waste oil would be accounted for under existing operating limits contained in Part 50, Appendix I. Thus, the addition of the small quantities of radioactive material present in waste oil to normal plant effluents should have a negligible impact on public health or environmental quality.

Additionally, other environmental impacts of waste oil disposal will likely be slightly reduced. These include the risks inherent in transportation (radiological and non-radiological), the fire or leakage hazards associated with storage of waste oil, and possibly the impacts from toxic constituents depending on the specific equipment and controls used and the status of EPA regulations intended to control these impacts.

Before presenting the industry cost estimates, it should be noted that there is no accurate way to determine the total industry's potential savings, since each licensee's particular situation is different, and it is not known how many plants will take advantage of the rule.

A licensee's implementation costs decrease if it decides to take advantage of the rule, because it saves the cost of having to prepare a license amendment. It is estimated that a typical, uncomplicated technical specification change costs a licensee about \$18,000. (This and all other values are in 1988 dollars.) (Cf. Abstract 2.2.1, "Generic Cost Estimates," NUREG/CR-4627, Rev. 1, 1989.)

As to operating costs, one licensee had estimated that it could save somewhere between \$3,300 and \$12,600 per year by incinerating its waste oil as opposed to burying it. These costs were based upon values of 220 to 825 gallons of waste oil disposal per year, with the per gallon cost being about \$15.

The solidification method assumed in this estimate was more cost-effective than that used in the original estimates of the petitioners in 1983 in that it involved lower volume increases. The petitioners' estimates of disposal costs saved were \$15-30/gal. The actual cost for an individual licensee will depend on the solidification method used, labor rates, distance to the LLW burial ground, and burial fees. The escalating costs of burial including the additions of surcharges could cause significant increases in the cost of disposal at a LLW burial facility thus resulting in increases in potential savings from incinerating waste oil. If we assume \$15/gal as the minimum amount saved and assume (based on the Brookhaven National Laboratory report) that an average PWR plant produces about 1000 gallons of slightly contaminated waste oil per year, its corresponding savings would be at least \$15,000 per year.<sup>2</sup> If an average remaining life of 30 years is assumed, along with a 5 percent annual real discount rate, a PWR's lifetime savings would be \$231,000. If the \$18,000 amendment cost savings are included, the total savings would be about \$250,000 per PWR.

With respect to a BWR, the range of waste oil produced is estimated at 3500 to 5000 gallons per year. Again, using similar assumptions, the annual savings range from \$52,500 to \$75,000, with the discounted operating lifetime savings ranging from \$808,500 to \$1,155,000. When the implementation cost savings are included, the totals become \$826,500 to \$1,173,000 per BWR.

Because of a change in EPA regulations governing the detection of toxic constituents (55 FR 11798; March 29, 1990), a larger portion of waste oil may

---

<sup>2</sup>The estimates for cost savings in this section assume the volumes of waste oil generated as estimated in the Brookhaven report (NUREG/CR-4730). Other data (referenced in footnote 1) suggest higher typical volumes. If those volumes are more representative, savings in disposal costs would be proportionately greater.

be classified as hazardous waste and, if radioactively contaminated, as mixed waste. This rule would allow incineration for all waste oils without affecting the applicability of other Federal, State, or local requirements. EPA regulations governing hazardous waste and used oil recycle and disposal are complex and have been undergoing change as the rule was developed. This introduces cost impacts on the various alternatives which the Commission cannot adequately assess.

Again, because of each plant's individual situation, and the fact that this rule is only an option, the estimates of disposal cost savings are only illustrative. With respect to other potential industry operating costs, a licensee will need to provide the NRC with changes to the Offsite Dose Calculations Manual and changes in equipment and procedures whether the licensee makes use of the rule, or applies for a license amendment to incinerate the waste oil; therefore, these costs will be the same in both cases and do not need to be included in this analysis. A key point which cannot be overlooked, however, is that permitting use of this alternative disposal option could conserve limited low-level burial ground space.

This rule will also reduce NRC's potential workload in processing individual requests for specific license amendments to permit incineration. The estimated NRC cost of a typical, uncomplicated, technical specification change is \$11,000. (Cf. Abstract 5.1, "General Cost Estimates," NUREG/CR-4627, Rev. 1, 1989.) Further, as noted above, the NRC is to receive modifications or additions to the licensee's Offsite Dose Calculations Manual and changes in equipment and procedures if the licensee plans to incinerate the waste oil through use of the rule or a license amendment. Hence the only difference in the NRC's cost is \$11,000 saved per licensee under the rule.

Because the rule allows a licensee to adopt a potentially more cost- and risk-effective means of disposing of this class of waste while maintaining existing limits on plant effluents, the net impact of this action is positive.

## 5. Decision Rationale

The Commission has yet to determine what action should be taken in regard to a generic rulemaking on BRC wastes and a decision in this area is not expected for some time. However, a decision on a dose criterion need not be part of this action. A simpler rule change can provide more timely relief from the costs of disposal of contaminated waste oil. The incineration of waste oil onsite will not add significantly to the environmental impacts of reactor operations, may in fact be environmentally preferable, and could result in savings in disposal costs and preservation of LLWB site capacity.

## 6) Implementation

### a) Schedule for Implementation

The final rule will be effective 30 days after publication in the Federal Register.

### b) Relationship to Other Existing or Proposed Requirements

Rule could be superseded by future actions on generic waste exemptions.



# ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

## AMENDMENT TO 10 CFR 20.305 and 20.2004

### DISPOSAL OF WASTE OIL BY INCINERATION

The Nuclear Regulatory Commission is amending its regulations to allow power reactor licensees to incinerate contaminated waste oil onsite without obtaining the specific approval of the Commission through a license amendment.

#### Environmental Assessment

##### Identification of Action

Present §§ 20.305 and 20.2004 forbid the incineration of any licensed material, except that specifically exempted by §§ 20.306 and 20.2005, without the specific approval of the Commission. This action amends §§ 20.305 and 20.2004 to allow power reactor licensees to incinerate slightly contaminated waste oil onsite without prior approval. It does not exempt the effluents from this process from the requirements established under Part 20 and Part 50, in particular, effluent limits and effluent monitoring and reporting.

##### Need for the Action

The Edison Electric Institute and the Utility Nuclear Waste Management Group petitioned the Commission (PRM-20-15, dated July 31, 1984) to initiate rule-making to define a level of radioactivity in power-reactor-generated waste oils that would permit disposal of these oils without regard to their

radioactive material content. Previously, the only generically approved method of disposal for low-level radioactively contaminated oil from nuclear power plants involved solidification or immobilization, packaging, and transportation to and burial at a licensed disposal site. The cost of this type of disposal is significant, while the concentrations of contaminants are quite low.

Several power reactor licensees have requested and been granted amendments to their licenses to allow onsite incineration of slightly contaminated waste oil. Others have been interested in doing so.

#### Environmental Impacts of the Action

The primary impact of this rulemaking is to reduce the administrative effort involved in the application for and issuance of amendments to power reactor licenses to allow incineration of waste oil. However, easing these requirements may result in greater amounts of waste oil being incinerated than would otherwise be the case. Thus, the overall impacts of such incineration must be considered.

Some information on the quantities and concentrations of waste oil generated at nuclear power plants was provided in the petition and in a Brookhaven report "Evaluation of Potential Mixed Wastes Containing Lead, Chromium, Used Oil, or Organic Liquids" (NUREG/CR-4730, January 1987). The amounts and concentrations vary considerably from plant to plant and even from year to year at a given plant. The volumes reported were approximately 1000 gal/year

at a PWR and up to 5000 gal/year at a BWR. Since publication of the proposed rule, the Electric Power Research Institute (EPRI) has published another report<sup>1</sup> estimating annual per reactor production at approximately 1000 gallons more than these previous reports. In addition, some utilities have large quantities in storage on site. Concentrations of radioactive contaminants are typically  $10^{-7}$  to  $10^{-5}$   $\mu\text{Ci/ml}$  but can be as high as  $10^{-3}$   $\mu\text{Ci/ml}$  in some cases. Total activity per reactor per year is estimated to average about  $10^{-4}$  Ci. The dominant radionuclides are Mn-54, Co-58, Co-60, Cs-134, and Cs-137. Others reported include Sr-90, Cd-109, Zn-65, and Zr-95. It appears that the bulk of the waste oil generated, in terms of volume, could be incinerated with resultant individual doses of less than 1 mrem/yr. Licensees with license amendments permitting onsite incineration have been able to dispose of most of their waste oils under a technical specification of 0.1% of the total dose limit, which is generally 15 mrem/yr from radioactive iodine and radioactive material in particulate form (in keeping with the guidance contained in Appendix I of Part 50), or 15  $\mu\text{rem/year}$ . This action modifies the restriction against incineration without prior approval contained in §§ 20.305 and 20.2004 to make an exception for waste oil at power reactor sites; however, it does not exempt the resulting effluents from the requirements of Part 20, § 50.36a, and Appendix I of Part 50. These limiting conditions for operation include dose limits for effluents and monitoring and reporting requirements. Although this action may slightly increase actual effluents, the radioactivity in these effluents must be kept within existing

---

<sup>1</sup>Below Regulatory Concern Owners Group: Nonradiological Characterization and Environmental Assessment of BRC Waste, Prepared by Science Applications International Corporation for the Electric Power Research Institute, EPRI NP-5674, February 1989.

limits for total dose from nuclear power plant effluents which have been determined to satisfy the "as low as is reasonably achievable" criterion.

Impacts from the toxic constituents of used oil may be minimized by onsite incineration and in any case the impacts from toxic emissions are estimated to be insignificant. (See discussion under "Alternatives to the Action.") Potentially, this action might result in reduced storage of waste oil onsite thus reducing the associated fire hazard. Also, risks inherent in transportation will be reduced from those associated with the previously available disposal option of burial at LLW disposal sites. Incineration will not require significant quantities of materials, water, or energy and in some cases may involve the recovery of energy, e.g., when the oil is burned in an auxiliary boiler.

Based on these considerations, this action will not result in a significant effect on the quality of the human environment.

#### Alternatives to the Action

As required by Section 102(2)(E) of NEPA (42 U.S.C. 4322(2)(E)), possible alternatives to the action have been considered. One alternative considered was to defer any action until decisions are made regarding generic BRC rulemaking. However, in keeping with an ongoing Commission moratorium, action on any waste exemption rulemaking has been deferred. It is apparent that the cost to licensees to solidify or immobilize, package, transport, and bury contaminated waste oil at licensed disposal sites is not justified based on

the very limited doses from incineration and the fact that other environmental impacts, if anything, will likely be reduced. Waste oil that is also classified as hazardous waste cannot be sent to low level waste burial grounds but may be a candidate for incineration subject to evolving EPA regulations governing burning of used oil. It is more cost-effective to allow the incineration through rulemaking rather than to continue processing applications for license amendment. For these reasons, this action should be taken rather than delay the relief any further.

Other alternatives were considered which would have granted more of what the petitioners originally requested. However, to allow licensees to use methods other than onsite incineration would require both more complete information and analysis concerning the impacts of using those methods than was submitted by the petitioners, and an NRC decision on a dose criterion for waste oil disposal. Controlled incineration onsite has been demonstrated to be an acceptable technical alternative for disposal of material. Although there is not sufficient information available to preclude allowing any of the other alternatives in the future, incineration appears to be environmentally preferable to the other proposed alternatives. Although used oil destined for disposal is not listed as a Federal hazardous waste, it can contain a significant amount of toxic substances consisting of various organic compounds and metals. Although there may be some environmental impact from the toxic nature of used oil for any disposal alternative, incineration at a controlled site is likely to minimize these effects and is preferred by the EPA over land disposal generally. Also, EPA is in the process of developing regulations to control the impact of disposal and recycle of used oil. Even with no



particular controls in place, the organic compounds are largely destroyed by the incineration process. As much as half or more of the metals may be released, but, for the quantities and circumstances of oil burned under this rule, concentrations to which the public may be exposed are not expected to be significant. Incineration at a controlled site assures that the disposal of the ash residue can be controlled appropriately considering both its radiologic and toxic constituents. Nationally, any nonradiological environmental effect of disposal of radioactively contaminated used oil from nuclear power plants would be small compared to that associated with the total quantity of used oil disposed. All power plants in total produce on the order of 300,000 gallons/year of such used oil. (The EPRI document cited above estimated 50,000 cubic feet/year, or 370,000 gallons per year, generated from all existing plants as well as those under construction.) Nationally, vehicle maintenance produces about 700 million gallons/year of used oil and industrial use approximately 400 million gallons/year.

#### Agencies and Persons Consulted

Further consultation has been made with the petitioners (PRM-20-15) concerning this action as a resolution of the petition.

Consideration has also been given to ongoing EPA activities, the 14 comment letters received on the petition, and the Brookhaven report, NUREG/CR-4730.

## Finding of No Significant Impact

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in 10 CFR Part 51, that this amendment to 10 CFR Part 20 to allow the incineration of slightly contaminated waste oil by power reactor licensees onsite will not have a significant effect on the quality of the human environment and that an environmental impact statement is not required. This determination is based on the foregoing environmental assessment performed in accordance with the procedures and criteria in Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions."

Enclosure 6

Two Copies of the Public Announcement

DRAFT PUBLIC ANNOUNCEMENT

NRC TO PERMIT ON-SITE INCINERATION OF CONTAMINATED WASTE OILS  
AT NUCLEAR POWER PLANT SITES

The Nuclear Regulatory Commission is amending its regulations to permit the on-site incineration of waste oils used in nuclear plants and contaminated with very small amounts of radioactive materials.

Previously, utility operators of nuclear power plants have disposed of contaminated waste oils at low-level radioactive waste disposal facilities. In a few cases, licenses authorizing operation of the facility were specifically amended by the NRC staff to permit on-site incineration.

This action is being taken in partial response to a July 1984 petition for rulemaking submitted by the Edison Electric Institute and the Utility Nuclear Waste Management Group.

As amended, the regulations will permit the on-site incineration of waste oils--petroleum derived or synthetic oils used principally as lubricants, coolants, hydraulic or insulating fluids or metalworking oils--that have been contaminated with small amounts of radioactive materials in the course of the operation or maintenance of a nuclear power plant.

Releases of radioactive effluents, including those from waste-oil incineration, are limited to "as-low-as-reasonably-achievable" levels already specified in Appendix I to Part 50 of the Commissions regulations. In addition, a generic assessment prepared for the staff shows that the environmental impacts of waste oil incineration will be minimal.

The amendment to Part 20 of the NRC's regulations will become effective on (date).



DRAFT PUBLIC ANNOUNCEMENT

NRC TO PERMIT ON-SITE INCINERATION OF CONTAMINATED WASTE OILS  
AT NUCLEAR POWER PLANT SITES

The Nuclear Regulatory Commission is amending its regulations to permit the on-site incineration of waste oils used in nuclear plants and contaminated with very small amounts of radioactive materials.

Previously, utility operators of nuclear power plants have disposed of contaminated waste oils at low-level radioactive waste disposal facilities. In a few cases, licenses authorizing operation of the facility were specifically amended by the NRC staff to permit on-site incineration.

This action is being taken in partial response to a July 1984 petition for rulemaking submitted by the Edison Electric Institute and the Utility Nuclear Waste Management Group.

As amended, the regulations will permit the on-site incineration of waste oils--petroleum derived or synthetic oils used principally as lubricants, coolants, hydraulic or insulating fluids or metalworking oils--that have been contaminated with small amounts of radioactive materials in the course of the operation or maintenance of a nuclear power plant.

Releases of radioactive effluents, including those from waste-oil incineration, are limited to "as-low-as-reasonably-achievable" levels already specified in Appendix I to Part 50 of the Commissions regulations. In addition, a generic assessment prepared for the staff shows that the environmental impacts of waste oil incineration will be minimal.

The amendment to Part 20 of the NRC's regulations will become effective on (date).

AC14-2  
PDR

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 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 January 6, 1993.

**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 those 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

#### 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



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 licensees, 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.<sup>1</sup> 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.

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 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 49236; 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 1698; 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).<sup>2</sup> 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 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.

<sup>1</sup> Environmental Protection Agency (50 FR 49164; November 29, 1985) noted at p. 49160.

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



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 (§ 265.40(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,<sup>3</sup> 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 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.

<sup>3</sup> EPA (51 FR 41900; November 18, 1986) noted at p. 41902.

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 burden 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)<sup>4</sup> 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 be a small percentage of the radiologically 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

<sup>4</sup> Copies of NUREG-4730 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, 5205 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.

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 defined in the individual technical specifications for each license. However, the rule has limited the incineration to the site where the waste oil is generated, in part so that any releases of radioactive material would be covered by the effluent limits in the technical specifications established under part 20 and appendix I to part 50. The licensee's decision on the specific location for incineration will depend on its ability to demonstrate compliance with those limits applicable to releases of effluents to unrestricted areas. The provision in § 20.305(b)(3) (or § 20.2004(b)(3)), which states that

§ 20.305 (or § 20.2004) supersedes inconsistent license conditions or technical specifications, is primarily intended to eliminate the need for amendment of license conditions or technical specifications to identify any new release points or specific sampling methods and to remove any restrictions from licensees already authorized to incinerate oil which would not otherwise be applicable under this rule.

Three commenters suggested the alternative of using mobile incinerators. One commenter thought it should be clarified that options other than those mentioned in the proposed rule would be acceptable including also central station power plant boilers.

The preamble to the proposed rule mentioned the options of use of an existing auxiliary boiler or incinerator or an incinerator constructed specifically for the purpose of burning waste oil. This was merely to illustrate the range of options which may be involved, not to limit the options. Nothing in the rule would restrict the use of central station power plant boilers or mobile incinerators if they are onsite. The use of this type of equipment at the site of a licensed nuclear reactor would be governed by the reactor license issued under 10 CFR part 50.

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 PSAR, 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 to 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, 162, 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, 68 Stat. 1243, 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, 10161).

For the purposes of sec. 233, 68 Stat. 858, 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. 161a, 68 Stat. 950, as amended (42 U.S.C. 2201(a)).

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 § 20.301.

(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 1st day of December 1992.

For the Nuclear Regulatory Commission,  
John C. Hoyle,

Acting Secretary of the Commission.

[FR Doc. 92-29549 Filed 12-4-92; 8:45 am.]

BILLING CODE 7580-01-M