

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
Jack R. Strosnider, Director

In the Matter of)	Docket Nos. NA
)	
)	
Radiac Research Corporation)	License No. NYDOL 1944-1879
)	
)	
)	10 CFR 2.206

DIRECTOR'S DECISION UNDER 10 CFR 2.206

I. Introduction

By letter dated November 4, 2003, Michael Gerrard of Arnold and Porter, representing Neighbors Against Garbage (the Petitioner), filed a Petition pursuant to Title 10 of the *Code of Federal Regulations*, Section 2.206. The Petitioner requested that the U.S. Nuclear Regulatory Commission (NRC) immediately revoke, suspend or modify the New York State Department of Labor (NYDOL) license held by Radiac Research Corporation under the NRC's authority pursuant to the Atomic Energy Act of 1954 (AEA), as amended to protect the common defense and security.

The basis for this request was that Radiac's radioactive waste storage operation adjoining the Radiac hazardous waste transfer and storage operation in Brooklyn, New York represented a significant risk to the common defense and security.

In a letter dated December 17, 2003, the NRC informed the Petitioner that the request for immediate action was denied because the limits on types and activity of radioactive material that Radiac was authorized to possess were below the levels of concern. The letter added that the issues identified in the petition would be reviewed under 10 CFR 2.206 and that this review would be conducted by the Office of Nuclear Material Safety and Safeguards (NMSS).

The Petitioner and the Licensee both participated in a meeting with the NMSS Petition Review Board (PRB) on February 20, 2004. At this meeting, the Petitioner provided additional information concerning the bases for the Petition, and the Licensee provided additional information concerning its response to the Petition. A concerned citizen and a representative of the Honorable Nydia M. Velasquez, U. S. House of Representatives, provided statements. Two other concerned citizens present at the public meeting later provided written statements via e-mail on February 27, 2004. The written presentations of the parties, as well as the transcript of this meeting, have been treated as a supplement to the Petition and are available in the Agencywide Documents Access and Management System (ADAMS), which provides text and image files of the NRC's public documents. These documents may be accessed through the NRC's Public Electronic Reading Room on the Internet at <http://www.nrc.gov/reading-rm.html>.

The ADAMS Accession Numbers for the packages containing all the publicly available documents regarding this petition are ML041040731 and ML041240485. If you do not have access to ADAMS or there are problems in accessing the documents located in ADAMS, contact the NRC Public Document Room (PDR) Reference staff at 1-800-397-4209, 301-415-4737, or by email to pdr@nrc.gov.

In a letter dated December 10, 2003, addressed to the Honorable Nils J. Diaz, Chairman, NRC, the Honorable Nydia M. Velasquez, U. S. House of Representatives, requested the NRC to investigate the risk of an accident or terrorist event at the Radiac Facility. By letter dated February 10, 2004, Chairman Nils J. Diaz informed Congresswoman Velasquez that the NRC is reviewing similar common defense and security issues identified in the Neighbors Against Garbage 2.206 petition and that she would be informed of the results of that review.

In a letter dated February 19, 2004, addressed to the Honorable Nils J. Diaz, Chairman, NRC, Mr. Vincent V. Abate, Chairman, Community Board No. 1, representing Brooklyn, New York, presented information pertinent to the Petition. By letter dated March 30, 2004, the PRB informed Mr. Abate that the information would be considered as a supplement to the Petition.

In letters dated February 27, 2004, the Petitioner and Licensee provided supplemental information concerning the petition. The Licensee's letter contained a request to reject the petition based on procedural issues. By letter dated April 27, 2004, the NRC staff informed the Petitioner and the Licensee that the Licensee's request to reject the petition was denied, that the PRB accepted the petition for review because it satisfied the criteria under 10 CFR 2.206 and Management Directive 8.11, and that the NRC staff would review the technical merits of the petition.

In a letter dated March 18, 2004, the Licensee provided supplemental information concerning the petition. In a letter dated, April 12, 2004, the Petitioner provided supplemental information concerning the petition.

The NRC sent a copy of the proposed Director's Decision to the Petitioner and to the licensee for comment on June 14, 2004. The Petitioner responded with comments on July 13, 2004. The licensee did not provide comments. The comments and the NRC staff's response to them are Enclosures to this Director's Decision.

II. Discussion

As noted in the introduction, the Petitioner requests that the NRC take action to revoke, suspend, or modify the NYDOL license held by Radiac. The Petitioner identifies that, while health and safety concerns remain under the regulatory authority of NYDOL, the NRC retains regulatory authority for common defense and security. The NRC emphasized in the July 12, 2003, letter from Martin J. Virgilio, former Director, Office of Nuclear Material Safety and Safeguards, to Mr. Michael B. Gerrard, Arnold and Porter, representing the Neighbors

Against Garbage, that public health safety concerns are under the regulatory authority of NYDOL and, therefore, the NRC cannot respond to any public health and safety concerns raised by the Petitioner.

As bases for its requested actions, the Petitioner raised a number of general and specific concerns related to the risks from operation of Radiac's radioactive waste storage facility. For the purpose of addressing the specific concerns, the NRC staff has grouped them under the two general concerns raised by the Petitioner. The two general concerns are risk to the common defense and security and public health and safety. The NRC will only review those issues related to its authority under common defense and security.

In response to the terrorist attacks on September 11, 2001, the NRC has been thoroughly re-evaluating the security of radioactive materials under its responsibility for common defense and security. Based on the joint U.S. Department of Energy (DOE) and NRC studies, and working with the International Atomic Energy Agency on the categorization of sources, specific radionuclides and quantities of those radionuclides that would represent a common defense and security concern have been identified. Using those radionuclides and quantities as screening levels, the NRC has identified NRC and Agreement licensees who have possession limits exceeding those screening levels. The NRC has evaluated the practices of those licensees and the physical and chemical form of the radionuclides the licensees actually possess to develop a graded approach in prioritizing and identifying high risk categories of licensees. Orders imposing additional security measures for the irradiators and manufacturers/distributors of radionuclides of concern (facilities that pose the highest risk and that, therefore, are of the highest priority categories) have been issued to NRC Licensees and Agreement State Licensees. Under the graded approach, radioactive waste facilities such as Radiac will be reviewed after higher-risk facilities. However, specific concerns identified by the Petitioner required the NRC to specifically review operations at the Radiac facility outside of the ongoing review process. The specific concerns under the general concern of risk to the common defense and security, and the evaluation of these concerns by NRC staff, are as follows:

1. Concern: The Petitioner states that co-location of the hazardous waste facility and radioactive waste facility makes the facilities an attractive target for terrorists.

Evaluation: The Petitioner's concern is that with the adjoining hazardous waste facility, terrorists could easily start a fire in the hazardous waste facility with a fire bomb or by other means. The Petitioner believes that a fire starting in the hazardous waste facility would be violent and intense because of the flammable material in the hazardous waste storage facility. Inadequate fire protection would then allow the fire to spread to the radioactive waste facility. The Petitioner used consequence analyses by its consultants to indicate serious physical and psychological consequences from such a fire. The Petitioner believes that the ease of attack and the resulting more severe consequences make the facility an attractive target for terrorists.

The NRC staff has reviewed the Petitioner's claims in its supplemental material including the affidavit from its fire protection expert and the fire consultant's report. The NRC staff did not review the supplemental material to judge the merits in the claim that there is a chance of a severe fire in the hazardous waste material. Rather, the NRC staff evaluated the effects of such a fire in the radiological waste facility. The NRC has not

established what consequences from the release of radioactive material would rise to common defense and security concerns. Rather, the NRC has identified certain radionuclides and quantities that could cause common defense and security concerns according to the graded approach, discussed above. The NRC staff did review the methodology used by the Petitioner and identified some assumptions that would result in over-estimating consequences. The Petitioner used the methodology in NUREG-1140, "A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees." NUREG-1140 is a guidance document that presents a methodology for calculating doses from accidental releases and is frequently referenced in the supplemental material submitted by the Petitioner as a standard to which it compared its assumptions and calculations. The Petitioner suggests that the hazardous material fire would result in larger release fractions than predicted in NUREG-1140, because the fire would be intense and could result in explosions.

The NRC staff considers that the intensity and violence of a fire in the hazardous waste facility may increase the likelihood of the fire spreading into the radioactive waste facility; however, because of its conservative assumptions, NUREG-1140 would still bound the magnitude of a release from such a fire. The conservative assumptions cited in NUREG-1140 to calculate the release fractions include: using the entire licensed inventory finely divided and placed on a large amount of combustible material, no credit given for sprinkler systems washing out airborne particles or shortening the duration of the fire; no credit given for firefighting efforts to stop the fire before it reaches the radioactive material; and no credit given for reduction in the amount of radioactive material released because of that material adhering to the building walls, ceilings and other surfaces within the building. Even under the severe case of the Petitioner's scenario, the release of radioactive material would be less than that evaluated in NUREG-1140. There is a wet pipe sprinkler system in the radioactive waste facility, firefighters would probably already be on the scene fighting the hazardous waste facility fire, and there would be a reduction in the amount of radioactive material released because of that material adhering to surfaces within the building. The NRC staff concludes that any potential release from the radiological waste facility caused by a fire started in the adjacent hazardous waste facility would be bounded by the NUREG-1140 scenarios resulting in exposures less than 1 rem (10 mSv) (see Concern 6 regarding significance of 1 rem (10 mSv)). Therefore, the NRC staff does not assign a greater than normal attraction for the facility as a terrorist target, based on the consequences of a potential release.

The Petitioner also implies that the co-location of the facilities causes heightened public concern, and, therefore the facilities are attractive targets. The Petitioner believes that terrorists would capitalize on that fear. The statements by members of the public at the public meeting, and submitted by e-mail, attest to the fears of the local residents. The NRC's mission is to regulate the Nation's civilian use of byproduct, source, and special nuclear material to ensure adequate protection of public health and safety, to promote common defense and security, and to protect the environment. One way the NRC performs that mission is through scientific and engineering evaluations of licensed activities. While psychological fear exists, the NRC can only evaluate the technical merits of the common defense and security issues that may contribute to the concerned citizens' fears and openly and accurately communicate those findings.

2. Concern: The Petitioner states the consequences for a fire at Radiac, based on NUREG-1140, are underestimated because NUREG-1140 does not consider a large number of people living in close proximity to such a licensed facility.

Evaluation: The NRC acknowledges the large population near the Radiac Research Corporation's facility in Brooklyn, NY. However, predicted consequences, based on NUREG-1140, would not underestimate actual consequences. Rather, consequences would be overestimated because of the following factors acknowledged in NUREG-1140:

- a. As discussed in Concern No. 1, the fraction of material released, according to NUREG-1140, is over predicted,
 - b. NUREG-1140 assumed a ground level release with no plume buoyancy which would result in little dispersion of the material and, for individuals near the facility, exposure to relatively high concentrations. Realistically, material released in a fire would rise above the facility (and nearby population) in a heated buoyant plume of air. This would provide greater opportunity for dispersion before the air cools and the material settles to the ground much farther away (several hundred meters). Consequently, due to exposures to lower concentrations of material, individual radiation exposures would be much less than predicted, and
 - c. Release of toxic fumes from a fire starting in the hazardous waste facility, under the Petitioner's scenario, could result in evacuation or other protective measures in downwind areas. Also, a natural response for individuals is to move away from irritation that might be caused by the toxic fumes. Both actions would limit residents' exposure to radioactive material in a following plume.
3. Concern: The Petitioner cites the U.S. Department of Justice's and other government sources' statements regarding the general heightened threat of terrorist attacks against hazardous material facilities and others.

Evaluation: The Petitioner accurately quotes other government agencies' statements about the general threat of terrorists attacks. However, a general increased threat of terrorist attacks, alone, is not a basis for revoking, suspending, or modifying a license. The NRC staff recognizes that the country, in general, is on a heightened state of alert due to the elevated terrorist threat and has issued security advisories to NRC and Agreement State licensees. These advisories provide recommendations for increasing licensees' awareness of terrorist threats and actions to reduce vulnerabilities. The Licensee has adopted those recommendations they deemed appropriate for their facility.

4. Concern: The Petitioner states that the security at the facilities is poor.

Evaluation: The Petitioner's concern is that the facility has poor security which increases the risk of terrorist attack by providing an easy or more attractive target. The Petitioner presented photographs showing graffiti and open, unmonitored doors, and provided statements from local residents about the poor security. The NRC staff acknowledges that the ability of the Petitioner to encroach upon the Licensee's property and take

photographs without being deterred raises security questions regarding unauthorized access to licensed material. However, subsequent to the Petitioner's photographs, the Licensee enhanced security measures. The Petitioner also states that it would be easy to park or drive a vehicle bomb near the Radiac facilities. The NRC visited the facility and reviewed the Licensee's security measures. The NRC staff observed that the Licensee has a means to provide physical security, a means for intrusion detection and response, and is in the process of implementing a security plan which will provide additional security measures. Based on the observations and information gathered from the site visit, the NRC has found security at the facility adequate to deter and detect attempts to gain unauthorized access to licensed materials.

5. Concern: The Petitioner states that the NRC's jurisdictional decision should be based on the Licensee's possession limit and not actual inventories.

Evaluation: The NRC has granted this, in part, by its decision to review this petition. As noted in Concern No. 1, the NRC has been using possession limits to identify categories of licensees that warrant further review for additional security measures to address issues under NRC's common defense and security jurisdiction.

6. Concern: The Petitioner states the Licensee's NYDOL license possession limits are a risk to the common defense and security.

Evaluation: The Petitioner presents several issues to reach this conclusion. The first issue is that the license's possession limits are different than limits identified by the NRC in NUREG-1140. NYDOL, as the regulatory authority, established limits and issued the license to Radiac based on its determination that public health and safety was protected. NYDOL regulations establishing the possession limits are compatible with NRC regulations. While the Petitioner identifies differences between the license possession limits and the limits under NUREG-1140, the possession limits in license condition 19 are the same as the limits in NRC's regulation, 10 CFR 30.72 Schedule C. The lack of specific limits in the license for Th-232, Ac-227, and gram limits for Plutonium is because Th-232 is source material licensed under Part 40, it has a low specific activity, and it is very hard to disperse; Ac-227 is very scarce; and Plutonium is special nuclear material licensed under 10 CFR Part 70. To provide a limit for Plutonium, NYDOL established a limit of 200 grams, again, compatible with NRC regulations.

The second issue is that releases involving radioactive material at the Licensee's possession limits can lead to doses greater than 1 rem (10 mSv), a dose the Petitioner states is significant. The 1 rem (10 mSv) is a dose level for which NYDOL regulations indicate it is reasonable to require the preparation of an emergency plan that would help to minimize exposures from an accidental release and protect public health and safety. The Petitioner fails to demonstrate how a 1 rem (10 mSv) dose to an individual demonstrates a threat to the common defense and security.

The Petitioner's supplemental information proposes that with the NYDOL possession limits and a methodology based on NUREG-1140, consequences from a fire or explosion would cause common defense and security concerns. The Petitioner's conclusions are based on several HOTSPOT and AIRDOSE calculations predicting releases of I-125, Th-232, Pu-238, and Pu-239 resulting in doses greater than 1 rem.

The NYDOL reviewed similar Petitioner scenarios for the same spectrum of radionuclides for health and safety concerns, as documented in a letter dated December 24, 2003, from Kevin E. Jones, Senior Attorney, NYDOL, to Michael B. Gerrard, Arnold and Porter. NYDOL concluded that Licensee's possession limits ensured public health and safety and that consequences from radionuclide releases from the Licensee would be bounded by NUREG-1140.

The NRC staff reviewed the Petitioner's calculations in the supplemental information in the context of common defense and security and to understand why the Petitioner's calculated consequences were greater than those expected using NUREG-1140 methodology. The NRC staff found that assumptions used in those calculations significantly over-estimate the potential consequences. Examples include using release rates larger than calculated by NUREG-1140, explosions in a building being more dispersive than a fire, and 50 pounds of explosive being able to disperse 400,000 pounds of Th-232 (20 curies of that low specific activity radionuclide). The assumptions used in NUREG-1140 are still considered bounding, and the parameters used have been calculated from experimental data by national laboratories in studies referenced in NUREG-1140.

The NRC staff reviewed current and historic inventories to determine if the quantities that the Licensee possess have exceeded quantities that would cause common defense and security concerns. As mentioned previously, the NRC has undertaken a thorough re-evaluation of security measures for radioactive materials. Based on the joint DOE and NRC studies, and working with the International Atomic Energy Agency on the categorization of sources, specific radionuclides and quantities of those radionuclides that would represent a common defense and security concern have been identified. Using those radionuclides and quantities as screening levels, the NRC has identified NRC and Agreement licensees who have possession limits exceeding those screening levels. To determine any need for additional security measures, the NRC has evaluated the practices of those licensees and the physical and chemical form of the radionuclides the licensees actually possess. The NRC staff has evaluated the Licensee's current and historic inventories and determined that the Licensee does not possess radioactive material that represents a risk to the common defense and security, and that current security measures are adequate.

7. Concern: The Petitioner states that the Licensee's possession limits would allow the Licensee to possess at least two Greater than Class C (GTCC) sealed sources and that these type of sources have been identified by the General Accounting Office (GAO) as posing a threat to security.

Evaluation: The Petitioner's reference to the GAO statement is accurate. The threat posed by GTCC sealed sources is that some of these sources are unwanted sources, with limited security. Theft or abandonment is a concern if a terrorist group were to take the sealed source and specially configure it into a dispersable "dirty bomb" that could spread contamination over a significant area. However, the Petitioner's scenario of a fire or even a vehicle bomb would not result in such a release from these sealed sources. In addition, the Licensee's security measures would provide adequate security from theft or abandonment for those sources.

As previously mentioned, the July 12, 2003, letter from Martin J. Virgilio, former Director, Office of Nuclear Material Safety and Safeguards, to Mr. Michael B. Gerrard, Arnold and Porter, representing the Neighbors Against Garbage, highlighted that public health safety concerns are under the regulatory authority of NYDOL. In 1962, the Commission entered into an agreement with the State of New York where the NRC relinquished and the State assumed regulatory authority for certain radioactive material. Therefore, NRC staff has determined the following specific concerns are health and safety issues that remain under the regulatory authority of NYDOL or other agencies and will not be considered as part of the petition but forwarded to the other regulatory agencies:

8. Concern: The Petitioner states that, as far as it can tell from responses to Freedom of Information Act requests and response its letters to NYDOL, the risk of an event at the hazardous waste store causing release of radioactive materials was not considered at all during the renewal process for the State radioactive material license.
9. Concern: The Petitioner states that the NRC has denied licenses based on accident scenarios demonstrating less than a one-in-one million chance of the accident. Specifically cited is a March 10, 2003, NRC Licensing Board denial of an application for an NRC license to build and operate a facility for storing spent fuel rods (NRC Atomic Safety and Licensing Board, Private Fuel Storage LLC, Partial Initial Decision, LBP-03-04).

Note: This case concerned an NRC licensing proceeding rather than a New York licensing proceeding and, therefore, is not directly applicable to this petition.
10. Concern: The Petitioner states that a search of records for both the hazardous waste and radioactive waste facilities show a history of violations.
11. Concern: The Petitioner states the radioactive waste facility is not needed to serve New York.
12. Concern: The Petitioner states that isotope tracking is lacking and may not be adequate to ensure possession limits are not exceeded.
13. Concern: The Petitioner states that fire prevention in the co-located Radiac Hazardous Waste Facility is inadequate. Specifically, Radiac hired a fire consultant who determined that hazardous waste facility sprinkler system is inadequate to prevent a pool fire resulting from the failure of a 55-gallon drum of heptane, using a worst case scenario dictated by the New York State Department of Environmental Conservation.
14. Concern: The Petitioner introduces the chemical consequences from a fire in the hazardous waste facility into both general concerns regarding public health and safety and common defense and security.

III. Conclusion

We have denied the request of the Petitioner to revoke, suspend, or modify the NYDOL license held by Radiac Research Corporation under the NRC's authority to protect the common defense and security.

We have granted, in part, the request of the Petitioner to consider possession limits in determining NRC common defense and security jurisdiction by consideration of its petition. This is consistent with the NRC's post-September 11, 2001 re-evaluation of security of radioactive materials under the NRC's responsibility for common defense and security (See Concern No. 1 and No. 5).

As provided in 10 CFR 2.206(c), a copy of this Director's Decision will be filed with the Secretary of the Commission for the Commission to review. As provided for by this regulation, the decision will constitute the final action of the Commission 25 days after the date of the decision unless the Commission, on its own motion, institutes a review of the decision within that time.

Dated at Rockville, Maryland, this 15th day of September 2004

Jack R. Strosnider, Director
Office of Nuclear Material Safety
and Safeguards

Attachments:

1. Petitioner's comments on the proposed Director's Decision
2. NRC staff response to the Petitioner's comments

cc: The Honorable Nydia Velasquez
Mr. Joseph Spektor, Radiac Research Corporation
The Honorable Linda Angello, Commissioner
NY State Department of Labor
Mr. Kevin Jones, NY State Department of Labor
Mr. Clayton Bradt, NY State Department of Labor
Ms. Carissa Fana, Office of The Honorable Nydia Velasquez
Mr. Vincent V. Abate, Community Board No. 1

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Dated at Rockville, Maryland, this 15th day of September 2004.

/RA/

Jack R. Strosnider, Director
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 Mr. Vincent V. Abate, Community Board No. 1

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