U.S. Department of Energy
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PAGE CHANGE

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10/3 draft Chg 5

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Chg 3:

SUBJECT: RADIATION PROTECTION OF THE PUBLIC AND ENVIRONMENT

1. PURPOSE. To revise Order DOE 5400.5 to implement changes to property release and control requirements that were directed by the Secretarial Memorandum of July 13, 2000, "Release of Surplus and Scrap Materials".

2. EXPLANATION OF CHANGE. Add the attached pages for Chapters V and VI.

CHAPTER V
CONTROL AND RELEASE OF PERSONAL PROPERTY INCLUDING METAL FOR RECYCLING

1. PURPOSE. All property released from DOE radiological control is subject to the requirements in Chapter VI, *General Requirements for Release of Property*, of this directive. This Chapter contains additional requirements specific to DOE control and release of personal property.

2. IMPLEMENTATION: To control the release of personal property, DOE contractors or the responsible DOE elements must establish programs that comply with this Chapter and applicable requirements of Chapter VI of this order.

3. SUSPENSION ON RECYCLING OF METAL. The unrestricted release for recycling of scrap metals from radiological areas shall not be permitted until—

   a. the DOE Field Office Manager (FOM) or designee certifies to the responsible Program Secretarial Officer (PSO) that a process is in place that includes procedures to implement the requirements set forth in this Chapter and Chapter VI of this Order;

   b. the Field Office has coordinated the process with the public through local public participation programs; and

   c. the responsible PSO confirms in writing to the Field Office Manager that the Program Office has verified and concurred with the Field Office Manager certification. A copy of this document must be provided to EH-1.

4. CONTROL OF METAL CONTAINING OR POTENTIALLY CONTAINING RESIDUAL

RADIOACTIVITY.

a. No scrap metal that contains or is suspected of containing residual radioactive material may be released for recycling into general commerce or transferred to another DOE element or party licensed by the Nuclear Regulatory Commission (NRC) or an Agreement State for the purpose of recycling the metal into the general commerce, unless—

(1) such material has been surveyed, and

(2) there is reasonable assurance that residual radioactive material is not detectable on the metal (i.e., until residual activity is indistinguishable from background based on measurements using appropriate commercially available technology and a comparison with activity levels of similar non-impacted materials).

b. If certification or verification surveys (consistent with paragraph VI.3.a) detect residual radioactive material on such property,

(1) it may not be released unless the residual radioactive material is removed to levels that are no longer detectable, or

(2) that portion of the scrap metal with detectable activity above background is separated from those portions for which no activity above background was measured.

c. Scrap metal that does not meet the requirements of Paragraphs V.4.a and V.4.b may be—

(1) disposed of at a licensed or authorized low-level radioactive waste site;

(2) disposed of in permitted waste landfills if the metal meets DOE approved authorized limits for such disposal, and there is reasonable assurance the metal will be appropriately disposed of (e.g., not released into commerce); or

(3) released for restricted recycling with a designated use (e.g., waste containers), if the material meets DOE approved Authorized Limits for the designated use and there is reasonable assurance that the property will not be recycled into general commerce.

5. PROPERTY MEETING PART 835 APPENDIX D LEVELS . Property released to an uncontrolled area that meets 10 CFR Part 835 Appendix D levels, but does not meet the surface guidelines in Table VI-1 of this Order or the Authorized Limits in paragraph VI.3.b, must be labeled to indicate that such materials should remain under DOE radiological control and may not be released. Appendix D to 10 CFR Part 835 sets surface activity limits for transferring material out of radiological areas on a DOE site.

6. PROPERTY SUBJECT TO NUCLEAR REGULATORY COMMISSION OR AGREEMENT STATE LICENSING. Personal property having activity levels that would require the person receiving it to have an NRC or Agreement State license for its possession shall not be released from DOE control unless the person receiving it is licensed to possess this material.

CHAPTER VI
GENERAL REQUIREMENTS FOR RELEASE OF PROPERTY

1. PURPOSE: This chapter contains requirements for controlling and releasing real or personal property (including material and equipment) from DOE control under this Order. Additional requirements applicable to the release of real property and the management of certain waste are provided in Chapter IV. Additional requirements applicable to personal property including metal for recycling are provided in Chapter V of this Order. The requirements in this chapter are intended to achieve the Department's goals that—

   a. the property is evaluated and radiologically characterized and, where appropriate, decontaminated prior to release;

   b. the level of residual radioactive material in property to be released is as near background levels as is reasonably practicable consistent with DOE ALARA process requirements and meets DOE authorized limits; and

   c. all property releases are appropriately certified, verified, documented, and reported; public involvement and notification needs are addressed; and processes are in place to appropriately maintain records.

2. REQUIREMENTS FOR PROCESS AND HISTORICAL KNOWLEDGE CLEARANCE OF PROPERTY. Property may be released from DOE control, if it has been evaluated and determined not to be contaminated with residual radioactive material (i.e., not radiologically impacted by DOE operations) using an evaluation process established in accordance with this paragraph.

   a. The process for such evaluations shall be developed and implemented by the DOE contractor or the responsible DOE line element and approved by the Field Office Manager.

      (1) The property clearance process shall include procedures for evaluating property considering operational records, operating history, and process knowledge for the following:

      (2) For real property, such evaluations shall be conducted for the specific property (land or structure) being released. Where several parcels are contiguous or structures are in the same area and were all used for similar functions, a single evaluation covering all parcels and structures is appropriate.

      (3) Personal property may be grouped so that the evaluations address multiple items or materials based on use (e.g., administrative equipment), location (e.g., buildings in which the personal property was used), or other common factors that may support the evaluation process.

b. The property clearance evaluation process shall include procedures for certifying that the property can be released from DOE control based on the following factors:

(a) operating history and records and process knowledge (VI.2.a), reflect that the property has never been used for radiological activities or in areas that could have resulted in the radiological contamination or activation of material; or

(b) contaminated property that has been decontaminated to meet DOE authorized limits and has not been used in a manner or in areas that could have resulted in it being recontaminated.

(1) The property clearance evaluation process shall include a periodic review and verification program to ensure that historical and process knowledge clearance under paragraph VI.2 is being effectively implemented.

c. Supplemental Surveys to Support the Process/Historical Knowledge Clearance of Property: If records and process knowledge are not fully adequate to certify the property for release using paragraph VI.2.a.(2), the property is subject to requirements under paragraph VI.3 unless a supplemental survey of the property is conducted to support the process/historical knowledge clearance and the determination that the property has been not been contaminated by residual radioactive material.

(1) Where historical and process knowledge indicates the property is not likely to be contaminated but records or knowledge are incomplete, radiological surveys may be conducted to supplement process/historical knowledge determinations.

(2) Such surveys must be designed to support the process knowledge determination and should be commensurate with the complexity of the site or property use history and potential for contamination.

d. Records documenting the process/historical knowledge releases must be available to the public and maintained and archived consistent with DOE records management requirements. The records shall include: a record of the process used to clear property under paragraph VI.2; certification documentation for areas or properties; and the results of verification reviews.

3. REQUIREMENTS FOR CONTROLLING AND RELEASING PROPERTY THAT CONTAINS OR IS SUSPECTED OF CONTAINING RESIDUAL RADIOACTIVE MATERIAL:

a. Surveys and Monitoring.

(1) Property must be evaluated and appropriately surveyed to identify and

characterize the radiological condition of the property.

(2) Survey protocols, procedures and equipment shall be sufficient to meet data quality objectives for certification or verification, as appropriate, to provide reasonable assurance that the DOE authorized limits for release have been met.

(a) The survey program including protocols and procedures shall be developed by the responsible DOE contractor or DOE elements.

(b) The survey program must be approved by the DOE field office before application for the release of property.

(3) Surveys and monitoring shall be conducted using appropriate commercially available equipment or their equivalent and DOE approved procedures.

(4) Where surface activity is being measured, surveys and monitoring procedures shall be capable of detecting radionuclides of concern to at least the levels in Table VI-1.

(5) Inaccessible Areas. Where potentially contaminated surfaces are not accessible for direct measurement (as in pipes, drains and ductwork), such property may be released only after case-by-case evaluation and documentation based on both the history of its use and available measurements demonstrate that the inaccessible surfaces are likely to be within the DOE approved authorized limits.

b. Authorized Limits. Authorized limits must be established to govern the release of sites, structures, or materials (personal and real property). DOE authorized limits are limits approved by DOE to permit the release of property from DOE control, consistent with DOE's framework for radiation protection standards for general employees, members of the public, and the environment.

(1) Authorized limits must be selected in accordance with DOE's ALARA process such that potential doses do not exceed and are as far below the dose limits and constraints as is practicable;

(2) Authorized limits must be selected to provide a reasonable expectation that the release will not cause the dose limits and constraints to be exceeded for current and future use of the property. All of the following conditions must be met.

(a) For real property, to be consistent with Subpart E of 10 CFR Part 20, Standards for Protection Against Radiation, the ALARA process shall be capped (i.e., shall not exceed) to ensure that actual and likely future use of real property will not exceed 25 mrem in a year (excluding indoor radon and radon decay

products) for DOE activities;

(b) For surface activity on structures, DOE Field Offices may approve the use of the surface activity guidelines (Table VI-1) to cap the ALARA selection process in lieu of the dose constraint;

(c) For surface activity on personal property, DOE field offices may approve the use of the surface activity guidelines (Table VI-1) to cap ALARA unless alternative guidelines are approved by DOE (Section VI.3.d);

(d) For scrap metal that will be recycled, activity levels cannot be detected above background using DOE-approved measurement protocols (Chapter V);

(3) Authorized limits must: Include any restrictions or conditions necessary to meet the dose limits and ALARA goals will and the means by which the restrictions will be implemented;

(4) Authorized limits must be documented and submitted to DOE for approval (see VI.3.d); and

(5) Authorized limits must be made available to the public as part of the public record.

c. Contents of an Application for Departmental Approval of Authorized Limits. Each application for Departmental approval of authorized limits must address the following:

(1) The nature of the property and its potential restricted or unrestricted uses;

(2) Information related to the ALARA evaluation including—

(a) the potential collective dose to the exposed population and the dose to those individual members of the public most likely to receive the highest dose in the actual and likely use scenario and the worst plausible use scenario;

(b) the cost and impact of actions necessary to reduce levels of residual radioactive material and the dose reduction (collective and individual) resulting from these actions;

(c) other factors supporting the ALARA process evaluation (paragraph II.2);

(3) The authorized limits requested for release of residual radioactive material; and

(4) The measurement and evaluation techniques proposed to determine compliance with the authorized limits.

d. DOE Approval of Authorized Limits and Measurement Protocols for Release.

(1) Application, approval and implementation of authorized limits for property subject to the surface activity guidelines in Table VI-1 or for soils and consistent with paragraph VI.3 and Chapter IV are the responsibility of DOE field and program elements.

(2) Graded Review and Approval Process. EH-1 approval of authorized limits is required for (a) residual radioactive material in mass or volume, or (b) alternatives to the surface activity guidelines provided in Table VI-1. Authorized limits and survey protocols for residual radioactive material in mass or volume or surface contamination limits in lieu of Table VI-1 may be derived and approved by DOE Field Office Managers without EH-1 written approval if all of the following conditions have been met:

(a) Based on a realistic but reasonably conservative assessment of potential doses, it is demonstrated to the satisfaction of the responsible Field Office Manager that—

1/ the release or releases of the subject material will not cause a maximum individual dose to a member of the public in excess of 1 mrem in a year or a collective dose of more than 10 person-rem in a year; and

2/ a procedure is in place to maintain records of the releases consistent with the requirements in this Order and that survey or measurement results are reported.

(b) A copy of documentation is provided to the Office of Environment, EH-4, at least 45 working days prior to the authorized limits becoming effective.

1/ The documentation must include the authorized limits, measurement/survey protocols and procedures. The documentation must also state that the ALARA process requirements have been achieved, supporting analyses have been prepared, and appropriate material has been developed to document any necessary coordination with the state(s) or NRC.

2/ EH-4 will notify the requestor, if the authorized limits or supporting material are incomplete or not acceptable, within 30 working days of receipt of documentation, otherwise the authorized limits (including any conditions or limitations set forth by the approving DOE field elements)

may be considered approved without written EH-1 approval.

(c) Where the National Nuclear Security Administration (NNSA) is the responsible program office, approval of alternative limits under paragraph VI.3.d.(2) must be granted by the NNSA Administrator in consultation with EH-1.

(3) Alternative limits that may cause a maximum individual dose of less than 25 mrem in a year but greater than 1 mrem in a year or a collective dose of more than 10 person-rem in a year, may only be implemented with written approval of EH-1. Where NNSA is the responsible program office, the Secretary (S-1) must approve the authorized limits considering the recommendations of the NNSA Administrator and EH-1.

e. Public Involvement and Notification of the Property Owner or Recipient.

(1) Site release policies and protocols shall be appropriately coordinated with the public. All DOE sites must have public involvement and communications programs. Field Office Managers should incorporate information on property control and release programs implemented to address the requirements of this chapter into site public involvement and communications programs.

(2) Each responsible field office must make the documentation on releases discussed in paragraph VI.3.g available to the public and the property owner or recipient, as appropriate.

f. Certification, and Verification.

(1) DOE contractors or DOE elements responsible for releases of property shall be responsible for the conduct of final surveys and the preparation of documentation to certify that the releases meet DOE requirements.

(2) In consultation with the responsible PSO, DOE field offices shall establish independent verification (IV) programs to provide reasonable assurance that property released from DOE control meets the radiological control requirements of this Order.

(a) The level and scope of the verification effort should be commensurate with the potential for contamination and the complexity and hazard and shall appropriately address real and personal property.

1/ Independent verification reviews shall be conducted for all real property released by the Department under the requirements of Section VI.3 and Chapter IV of this Order.

2/ Independent verification reviews shall be conducted for the processes and programs for releasing personal property and the independent verification program shall include periodic radiological monitoring of personal property being released by the Department to validate accuracy and representativeness of measurements and procedures used to certify the release of such property.

(b) Verification monitoring may employ direct surveys or, in the case of personal property, the use of bulk monitoring (e.g., portal-type monitors like those used by steel mills or public landfills) to confirm that property meets the requirements of the Order. However, if the basis of certification is bulk monitoring, verification surveys must employ direct measurement or sampling for confirmation of bulk monitoring techniques.

(c) Personnel involved in verification must be independent of the operating contractor, and DOE project management responsible for certifying the release must report directly to DOE.

g. Documentation of Releases. Releases must be documented. This documentation, depending on the type of property being released, may describe the release process and the property regulated by the specific authorized limits, or it may be specific to the property or to an area from which individual items are released.

(1) The documentation shall indicated the authorized limits and include other data supporting the release of property such as radiological certification and independent verification results, in a form that—

(a) describes the property;

(b) describes the radiological history of the property;

(c) identifies the criteria for release of the property, describes the bases for the criteria, documents the Department's approval of the release criteria, and documents that the release criteria are not inconsistent with applicable State and Federal requirements;

(d) describes any restrictions on use or disposition of the property and the specific process or means that provide a reasonable expectation that the restrictions or controls will be implemented;

(e) describes the survey of the property, the date of the survey, the identity of the surveyor, the types and identification numbers of the instruments used, and the results of the survey;

(f) indicates the quantity and disposition of any radioactive waste

resulting from decontamination; and

(g) identifies, as appropriate, the recipient of the property, the property destination, or the property's disposition.

(2) Field Office Managers or their designees shall ensure the preparation and maintenance of certification documentation that property being sold or otherwise transferred from DOE radiological control—

(a) meets all DOE radiological protection requirements,

(b) is not controlled for national security reasons, and

(c) meets DOE property control requirements.

Field Office Managers or their designees shall ensure that specific DOE staff/organization review and approval responsibilities for the certification documentation are identified.

h. Records Maintenance and Reporting.

(1) All records relating to the release of property from a controlled area shall be maintained in compliance with DOE 200.1, "Information Management Program" and DOE 243.x, "Records Management Program" [if final when page change is issued].

(2) All documentation required for the release of "high risk property" in 41 CFR 109-1.5303 (paragraphs (b)(2) and (b)(4)) shall be prepared and maintained for property released under paragraph VI.3 of this Order.

(3) The documentation (see paragraph 3g above) need not accompany the transferred personal property but must be available upon request.

(4) Documentation relating to the release of personal property must be maintained (either by specific items of by a group or category) for a period consistent with those required by the Department of Energy Administrative Records Schedule 4, "Property Disposal Records."

(5) For real property, documentation must be maintained for each parcel of property or, where appropriate, like group of parcels or structures released and be permanently retained through records management and archival procedures, and

(6) Releases shall be summarized annually and submitted to the site's landlord program office.

(a) Landlord programs shall consolidate such information from sites under their jurisdiction and provide the summaries to the DOE

Office of Management and Administration.

(b) The DOE Office of Management and Administration shall establish and maintain a system to track and retain the summary records of property releases.

(7) In the Annual Site Environmental Report required by DOE M 231.1-1, ES&H REPORTING MANUAL, DOE sites and facilities releasing property shall summarize and report on—

(a) DOE authorized limits approved for controlling the releases, and

(b) surveys and independent verification programs results.

Table VI-1. Surface Activity Guidelines
Allowable Total Residual Surface Activity (dpm/100 cm^2)[1,2]

Radionuclides[3]	**Average** [4,5]	**Maximum** [4,5]	**Removable**[6]
Group 1 - Transuranics, I-125, I-129, Ac-227, Ra -226, Ra-228, Th-228, Th-230, Pa-231	100	300	20
Group 2 - Th-natural, Sr-90, I-126, I-131, I-133, Ra-223, Ra-224, U-232, Th-232	1000	3000	200
Group 3 - U-natural, U-235, U-238, and associated decay products, alpha emitters	5000	15000	1000
Group 4 - Beta-gamma emitters (radionuclides with decay modes other than alpha emission or spontaneous[7] fission) except Sr-90 and others noted above	5000	15000	1000
Tritium (applicable to surface and subsurface)[8]	N/A	N/A	10,000

[1] The values in this table (except for tritium) apply to radioactive material deposited on, but not incorporated into, the interior or matrix of the property. No generic concentration guidelines have been approved for release of material that has been contaminated in depth, such as activated material or smelted contaminated metals (e.g., radioactivity per unit volume or per unit mass). Authorized limits for residual radioactive material in volume must be approved consistent paragraph VI.3.d.

[2] As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by counts per minute measured by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[3] Where surface contamination by both alpha- and beta-gamma-emitting radionuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides should apply independently.

[4] Measurements of average surface activity should not be averaged over an area of more than 1 m^2. Where scanning surveys are not sufficient to detect levels in the table, static counting must be used to measure surface activity, and representative sampling (static counts on the areas) may be used to demonstrate by analyses of the static counting data. The maximum contamination level applies to an area of not more than 100 cm^2.

[5] The average and maximum dose rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/h and 1.0 mrad/h, respectively, at 1 cm.

[6] The amount of removable material per 100 cm^2 of surface area should be determined by wiping an area of that size with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wiping with an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm^2 is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. It is not necessary to use wiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.

[7] This category of radionuclides includes mixed fission products, including the Sr-90 that is present in them. It does not apply to Sr-90 that has been separated from the other fission products or mixtures where the Sr-90 has been enriched.

[8] Measurements should be conducted by a standard smear measurement but using a damp swipe or material that will readily absorb tritium, such as polystryene foam. Property recently exposed or decontaminated, should have measurements (smears) at regular time intervals to prevent a build-up of contamination over time. Because tritium typically penetrates material it contacts, the surface guidelines in group 4 do not apply to tritium. Measurements demonstrating compliance of the removable fraction of tritium on surfaces with this guideline are acceptable to ensure that non-removable fractions and residual tritium in mass will not cause exposures that exceed DOE dose limits and constraints.