

EM 385-1-80
30 May 97

Appendix I. Sample USACHPPM Survey Protocol/Checklist.

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United States Army Center for Health Promotion and Preventive Medicine (USACHPPM) Audit based on the Nuclear Regulatory Commission (NRC) Field Notes for Inspection of Industrial, Academic, and Research Facilities

References: Title 10 Code of Federal Regulation (CFR), Chapter I - NRC. Parts 19, 20, 20, 61, & 71 Energy; Title 49 CFR Parts (170-1 89), Transportation; and Title 40 CFR Parts (1500- 1508), Protection of Environment

1. INSPECTION HISTORY

() N/A - Initial Inspection

A. Violations were identified during any of the last two inspections or two years, whichever is longer

() Yes () No

B. Response letter(s) or 591(s) dated _____

C. Open violations from previous inspections:

<u>Requirement</u>	<u>Violation</u>	<u>Corrective Action Taken (Yes/No)</u>	<u>Status</u> <u>Open/Closed</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

D. Explain any previous violation(s) not corrected or repeated

() N/A

2. ORGANIZATION AND SCOPE OF PROGRAM

A. Organizational Structure

+ Individuals contacted during inspection

* Individuals present at exit meeting

1. Meets license conditions (L/C) or requirements [L/C] Yes No
2. Multiple authorized locations of use and/or laboratories Yes No
If yes, may us ATTACHMENT A as a guide for location(s) or lab(s) inspected and note lab numbers where violations are found
3. Briefly describe scope of activities, including types and quantities of use involving byproduct material, frequency of use, staff. size, etc.

B. Radiation Safety Committee (RSC) required L/C] Yes No

1. R-SC fulfills license requirements [L/C] Yes No
2. Records maintained [L/C] Yes No

C. Radiation Safety Officer (RSO)

1. Authorized on license [L/C] Yes No
2. Fulfills duties as RSO Yes No

Remarks:

3. TRAINING, RETRAINING, AND INSTRUCTIONS TO WORKERS

- A. Instructions to workers/students per [10 CFR 19.12] Yes No
- B. Training program required [L/C] Yes No

1. If so, briefly describe training program:

2. Training program implemented Yes No
3. Periodic training program required Yes No
4. Periodic training program implemented Yes No
5. Records maintained Yes No

- C. Individuals understanding of procedures and Regulations is adequate () Yes () No
- 1. Current operating procedures () Yes () No
 - 2. Emergency procedures () Yes () No
 - 3. Use of survey instrumentation () Yes () No

D. Revised Part 20

Workers cognizant of requirements for:

- 1. Radiation Safety Program [20.1101] () Yes () No
- 2. Annual dose limits [20.1301,1302] () Yes () No
- 3. New forms 4 and 5 () Yes () No
- 4. 10% monitoring threshold [20.1502] () N/A () Yes () No
- 5. Dose limits to embryo/fetus and declared pregnant worker [20.1208] () Yes () No
- 6. Grave Danger Posting [20.1902] () N/A () Yes () No
- 7. Procedures for opening packages [20.1906] () N/A () Yes () No
- 8. Sewer disposal limits [20.2003] () N/A () Yes () No

Note: Deficiencies in this area, while not always a violation, should be brought to the attention of license management at the exit meeting and in the cover letter transmitting the inspection report or Notice of Violation (NOV).

Remarks:

4. INTERNAL AUDITS, REVIEWS OR INSPECTIONS

- A. Audits are required [L/C] () Yes () No
- B. Audits or inspections are conducted () Yes () No
 - (1) Audits conducted by _____
 - (2) Frequency _____
- C. Content and implementation of the radiation protection program reviewed annually by the licensee [20.1101 (c)] () Yes () No
- D. Records maintained [20.2102] () Yes () No

5. FACILITIES

- A. Facilities as described in license application [L/C] () Yes () No
B. Describe any Self-contained dry-source-storage irradiators [Part 36]
and/or survey instrument calibrations (model, radionuclide, activity, use, etc.) () N/A

1. Maintenance of safety-related components performed by
authorized persons [L/C] () Yes () No
2. Access to keys and/or material controlled [20.1801,1802, L/C] () Yes () No
3. Access to high/very high radiations areas controlled
[20.1601, 1602, L/C] () Yes () No
4. Adequate protection of shield integrity, fire protection [L/C] () Yes () No

Remarks:

6. MATERIALS

- A. Isotope, chemical form, quantity and use as authorized [L/C] () Yes () No
B. Licensed materials secured to prevent unauthorized removal or
Access [20.1801,1802] () Yes () No
C. Leak tests and Inventories [L/C] () Yes () No
1. Performed as required () N/A () Yes () No
 2. Adequate analysis methodology and sensitivity () N/A () Yes () No
 3. Records maintained [L/C] () Yes () No

Remarks:

7. RADIATION SURVEYS

A. Instruments and equipment:

- | | | |
|---|---------|--------|
| 1. Appropriate operable survey instrumentation possessed and Readily accessible [L/C] | () Yes | () No |
| 2. Calibrated as required [20.1501, L/C] | () Yes | () No |
| 3. Calibration records maintained [20.2103(a)] | () Yes | () No |

B. Briefly describe area survey requirements [30.1501(a). L/C]: ,

C. Performed as required [20.1501(a), L/C]: () Yes () No

- | | | |
|---|---------|--------|
| 1. Contamination found | () Yes | () No |
| 2. Corrective action taken and documented | () Yes | () No |

D. Records maintained [20.2103, L/C] () Yes () No

E. Protection of members of the public

- | | | |
|--|---------|--------|
| 1. License made adequate surveys to demonstrate either (1) that the Total Effective Dose Equivalent (TEDE) to the individual likely to receive the highest dose does not exceed 100 mrem in a year, or (2) that if an individual were continuously present in an unrestricted area, the external dose would not exceed 2 mrem in any hour and 50 mrem in a year [20.1301(a)(1), 1302(b)] | () Yes | () No |
| 2. Unrestricted area radiation levels do not exceed 2 mrem in any one hour [20.1301(a)(2)] | () Yes | () No |
| 3. Records maintained [20.2103, 2107] | () Yes | () No |

Remarks:

8. RADIOACTIVE WASTE () N/A
- A. Disposal () N/A
1. Decay-in-storage () N/A
- a. Procedures approved [20.2001(a)(2), L/C] () Yes () No
- b. In accordance with [L/C] () Yes () No
- c. Labels removed or defaced [20.1904(b)] () Yes () No
2. Special procedures performed as required [L/C] () Yes () No
3. Liquid scintillation (LS) media and animal carcasses per [20.2005] () N/A () Yes () No
4. Improper/unauthorized disposals [20.2001] () Yes () No
5. Records maintained [20.2103(a), 2108, L/C] () Yes () No
- B. Effluents
1. Release into sanitary sewer [20.2003] () N/A () Yes () No
- a. Material is readily soluble or readily dispersible [20.2003(a)(1)] () Yes () No
- b. Monthly average release concentrations do not exceed Appendix B values [20.2003] () Yes () No
- c. No more than 5 Ci of H-3, 1 Ci of C-14 and 1 Ci of all other radionuclides combined released in a year [20.2003] () Yes () No
- d. Procedures to ensure representative sampling and analysis properly implemented [20.1501(a)(2), L/C] () Yes () No
2. Release to septic tanks [20.2003] () N/A () Yes () No
- a. Within unrestricted limits (App. B. Table 2] () Yes () No
3. Waste incinerated () N/A () Yes () No
- a. License authorizes [20.2004(a)(3)] () Yes () No
- b. Licensee directly monitors exhaust () Yes () No
- c. Airborne releases evaluated and controlled [20.1501, 1701] () Yes () No
4. Control of effluents and ashes [20.1201, 1301, 1501, 2001, L/C] {See also IP 87102, RG 8.37} () Yes () No

- C. Waste Management N/A
1. Waste compacted [L/C] Yes No
 2. Storage area(s) N/A
 - a. Protection from elements and fire [L/C] Yes No
 - b. Control of waste maintained [20.1801] Yes No
 - c. Containers properly labeled and area properly posted [20.1902, 1904] Yes No
 - d. Package integrity maintained [L/C] Yes No
 3. Packaging, Control and Tracking [App. F.III] [20.2006(d)]:

Note: The licensee's waste is likely to be Class A.

 - a. Not packaged for disposal in cardboard or fiberboard boxes [61.56(a)] Yes No
 - b. Liquid wastes solidified, i.e., less than 1% freestanding liquid, and void spaces minimized [61.56(a), (b)] Yes No
 - c. Does not generate harmful vapors [61.56] Yes No
 - d. Structurally stable (will maintain its physical dimensions and form under expected disposal conditions) [61.56(b)] Yes No
 - e. Packages properly labeled [App. F.IIIA.2] Yes No
 - f. Licensee conducts a QC program to ensure compliance with [61.55, 56] and includes management evaluation of audits [App. F.IIIA.3] Yes No
 - g. Shipments not acknowledged within 20 days after transfer are investigated and reported [App. F.III.A.8] N/A Yes No
 4. Transfers to land disposal facilities N/A
 - a. Transferred to person specifically licensed to receive waste [30.41, 20.2001(b)] Yes No
 - b. Each shipment accompanied by a manifest prepared as specified in Section I of Appendix F [20.2006(b), App. F.III.A.4] Yes No
 - c. Manifest certified as specified in Section II of Appendix F [20.2006(c)] Yes No

D. Records of surveys and material accountability are maintained [20.2103, 2108] Yes No

Remarks:

9. RECEIPT AND TRANSFER OF RADIOACTIVE MATERIAL

A. Describe how packages are received and by whom: N/A

B. Written package opening procedures established and followed [20.1906(e)] Yes No

C. All incoming packages with DOT labels wiped, unless exempted (gases and special form) [20.1906(b)(1)] Yes No

D. Incoming packages surveyed per [20.1906(b)(2)] Yes No

E. Monitoring in (c) and (d) performed within time specified [20.1906(c)] Yes No

F. Transfer(s) between licensees performed per [30.41] Yes No

G. All sources surveyed before shipment and transfer [20.1501(a), 49 CFR 173.475(i), L/C] Yes No

H. Records of surveys and receipt/transfer maintained [20.2103(a), 30.51] Yes No

I. Transfers within licensee's authorized users or locations performed as required [L/C] N/A Yes No

J. Arrangements made for Type A packages [20.1906(a)] Yes No

K. Package receipt/distribution activities evaluated for compliance with 20.1301 [20.1302] N/A Yes No

Remarks:

10. TRANSPORTATION (10 CFR 71.5(a) and 49 CFR 170-189) () N/A () Yes () No

A. Licensee shipments are:

- () delivered to common carriers
- () transported in licensee's own private vehicle
- () both
- () no shipments since last inspection

B. HAZMAT training [172.700-704] () Yes () No

C. Packages () N/A

1. Authorized packages used [173.415, 416(b)] () Yes () No

2. Performance Test records on file () N/A

a. Special Form Sources [173.476(a)] () Yes () No

b. DOT-7A packages [173.415(a)] () Yes () No

3. Chain of Custodies (COCs) on file with NRC for Type B [71.12(c)(1)] () Yes () No

4. Two labels (White-I, Yellow-II, Yellow-III) with Transport Index (TI) Nuclide, Activity, and Hazard Class [172.403, 173.441] () Yes () No

5. Properly marked (Shipping Name, UN (United Nations) Number- (I.D. number), Package Type, Reportable Quantity (RQ), "This End Up" (liquids), Name and Address of consignee) [172.301, 306, 310, 312, 324] () Yes () No

6. Closed and sealed during transport [173.475(f)] () Yes () No

D. Shipping Papers () N/A

1. Prepared and used [172.200(a)] () Yes () No

2. Proper {Shipping name, Hazard Class, UN Number, Quantity, Package Type, Nuclide, RQ, Radioactive Material, Physical and chemical form, Activity, Category of label, TI, Shipper's Name, Certification and Signature, Emergency Response Phone Number, "Limited Quantity" (if applicable), "Cargo Aircraft Only" (if applicable)} [172.200-204] () Yes () No

3. Readily accessible during transport [177.718(e)] () Yes () No

- E. Vehicles N/A
- 1. Placarded [172.504] Yes No
 - 2. Cargo blocked and braced [177.842(d)] Yes No
 - 3. Proper overpacks (shipping name, UN Number, labeled, statement indicating that inner package complies with specification packaging) [173.25] Yes No
- F. Any incidents reported to DOT [171.15, 16] Yes No

Remarks:

11. PERSONNEL RADIATION PROTECTION

- A. Licensee performed exposure evaluation [20.1501] Yes No
- B. Licensee incorporated as low as reasonably achievable (ALARA) considerations in the Radiation Protection Program [20.1101(b)] Yes No
- C. External Dosimetry N/A
 - 1. Licensee monitors workers [20.1502(a), L/C] Yes No
 - 2. External exposures account for contributions from airborne activity [20.1203] N/A Yes No
 - 3. Supplier _____ Frequency _____
 - 4. Supplier is National Voluntary Laboratory Accreditation Program (NVLAP) - approved [20.1501(c)] Yes No
 - 5. Dosimeters exchanged at required frequency [L/C] Yes No
- D. Internal Dosimetry N/A
 - 1. Licensee monitors workers [20.1502(b), L/C] Yes No
 - 2. Briefly describe licensee's program for monitoring and controlling internal exposures [20.1701,1702, L/C]:

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- 3. Air sampling performed () Yes () No
- 4. Monitoring/controlling program implemented () Yes () No
- 5. Respiratory protection equipment [20.1703, L/C] () Yes () No

E. Reports

- 1. Reviewed by _____ Frequency _____
- 2. Inspector reviewed personnel monitoring records for period _____ to _____
- 3. Prior dose determined for individuals likely to receive. doses [20.2104] () Yes () No
- 4. Maximum exposures Total Effective Dose Equivalent (TEDE) _____ Other _____ () Yes () No
- 5. Maximum Committed Dose Equivalents (CDEs) _____ Organs _____
- 6. Maximum Committed Effective Dose Equivalent (CEDE) _____
- 7. Licensee sums internal and external [20.1202] () Yes () No
- 8. Total Effective Dose Equivalent (TEDE) and Total Organ Dose Equivalent (TODE) within limits [20.1201] () Yes () No

Note: TEDE = Deep Dose Equivalent (DDE) ÷ CEDE

* DDE (rem) at 1000 mg/cm

* CEDE (rem) = {I/(stochastic) ALI} x 5 rem/year

TODE = DDE ÷ CDE

* CDE (rem) = [I/(non-stochastic)ALI] x 50 rem/year

Where I is the intake in units of microcuries and ALI is the Annual Limit on Intake in microcuries

- 9. NRC Forms or equivalent [20.2104(d), 2106(c)]
 - a. NRC-4 () Yes () No Complete: () Yes () No
 - b. NRC-5 () Yes () No Complete: () Yes () No
- 10. Worker declared her pregnancy in writing during inspection period (review records) () N/A () Yes () No
 - If yes, licensee in compliance with [20.1208] () Yes () No
 - and records maintained [20.2106(e)] () Yes () No

- F. Who performed planned special exposures (PSEs) at this facility (number of people involved and doses received) {20.2106, 2104, 2105, 2204} N/A
- G. Records of exposures, surveys, monitoring, and evaluations maintained [20.2102, 2103, 2106, L/C] Yes No

Remarks:

12. USACHPPM INDEPENDENT MEASUREMENTS

- | <u>A. Survey instrument (make & model)</u> | <u>Serial Number</u> | <u>Last calibration</u> | | |
|--|----------------------|-------------------------|------------------------------|-----------------------------|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| B. Surveyor's measurements were compared to licensee's | | | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| C. Describe the type, location, and results of measurements: | | | | |

13. NOTIFICATION AND REPORTS

- A. Licensee in compliance with [19.13, 30.50] (reports to individuals, public and occupational, monitored to show compliance with Part 20) N/A Yes No
- B. Licensee in compliance with [20.2201, 30.50] (theft or loss) None Yes No
- C. Licensee in compliance with [20.2202, 30.50] (incidents) None Yes No
- D. Licensee in compliance with [20.2203, 30.50] (overexposures and high radiation levels) None Yes No
- E. Licensee aware of NRC Ops Center phone number Yes No

14. POSTING AND LABELING

- A. NRC-3 "Notice to Workers" is posted [19.11] Yes No
- B. Parts 19, 20, 21, Section 206 of Energy Reorganization Act, procedures adopted pursuant to Part 21, and license documents are posted or a notice indicating where documents can be examined is posted [19.11, 21.6] Yes No
- C. Other posting and labeling per [20.1902, 1904 and the licensee is not exempted by [20.903, 1905] Yes No

Remarks:

15. RECORDKEEPING FOR DECOMMISSIONING N/A

- A. Records of information important to the safe and effective decommissioning of the facility maintained in an independent and identifiable location until license termination [30.35(g)] Yes No
- B. Records include all information outlined in [30.35(g)] Yes No

Remarks:

16. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENTATION

A. Environmental Analysis (40 CFR Parts 1500-1508):

1. Categorical Exclusions (CX) Yes No
If Yes, documented Record of Environmental Consideration (REC) Yes No
Signatures by the proponent and environmental coordinator Yes No
2. Environmental Assessment (EA) N/A Yes No
If Yes and found not significant, was a Finding of No Significant Impact (FNSI) prepared and published Yes No
If Yes and found significant impacts, was Notice of Intent (NOI) to prepare an Environmental Impact Statement Yes No
3. Environmental Impact Statement (EIS) N/A Yes No

Remarks:

17. BULLETINS AND INFORMATION NOTICES

- A. Bulletins, Information Notices, NMSS Newsletters, etc.,
received by the Licensee Yes No
- B. Licensee took appropriate action in response to Bulletins,
Generic Letters, etc. Yes No

Remarks:

18. SPECIAL LICENSE CONDITIONS OR ISSUES N/A

A. Special license conditions or issues to be reviewed:

B. Evaluation:

19. CONTINUATION OF REPORTS ITEMS N/A

20. VIOLATIONS, NON-CITED VIOLATIONS (NCVs) AND OTHER ISSUES N/A

Note: Briefly state (1) the requirement and (2) how and when the licensee violated the requirement. For NVCs, indicate why the violation was not cited.

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21. PERFORMANCE EVALUATION FACTORS (PEFs)

Licensee (name & location)

Inspector _____

Inspection Date _____

- A. Lack of senior management involvement with the radiation safety program and/or Radiation Safety Officer (RSO) oversight Yes No
- B. RSO too busy with other assignments Yes No
- C. Insufficient staffing Yes No
- D. Radiation Safety Committee fails to meet or functions inadequately N/A Yes No
- E. Inadequate consulting services or inadequate audits N/A Yes No

Remarks (consider above assessment and/or other pertinent PEFs):

Regional follow-up on above PEFs citations:

USACHPPM
ATTN: MCHB-DC-OIP
Aberdeen Proving Ground, MD
21010-5422

Phone:
Commercial: (410)-671-3502
Autovon (DSN): 584-3502
Fax: (410)-671-8261

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