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1 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide general information and procedures for radioactive waste management at OITL at KPM, , IMB, UiO. This procedure will ensure that radioactive wastes are managed (collected, transported and stored) in ways that protect the quality of the environment and the safety of staff at KPM, UiO and OITL users.

2 RESPONSIBILITIES

The head of OITL are responsible for updating this SOP and related procedures. The radiation protection officer (RPO) is responsible to make sure that all the calibrated equipment to monitor the radioactivity level are available at OITL.

The RPO:

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3 DEFINITIONS

Waste: waste is defined as “any gas, liquid, solid (or a combination of wastes) that is surplus to, or unwanted from, any industrial, commercial, domestic or other activity, whether or not of value”.

Radioactive waste: For the purposes of this document, radioactive waste is defined as waste, contain radioactive isotopes. Radioactive waste includes all disposable equipment (e.g. gloves, needles, syringes, cages with contents, paper) that have been in contact with radioactive isotopes. .


4 PROCEDURE

- I. All radioactive waste generated should be properly wrapped to prevent leakage and then placed in yellow hazardous waste bins or thick yellow plastic bags, sealed with zip tie.
- II. The hazardous waste boxes / yellow plastic bags must be marked with a yellow HSE label and «Radioactive Material» sticker / tape. On the yellow HSE label, check "Other waste" and fill in "RADIOACTIVE", isotope, users name and package date. Do not mix waste containing different isotopes. Contaminated sharp materials are placed into a sharps container that has a radioactive material label on it.
- III. Radioactive waste generated from working with PET isotopes (C-11, F-18, Ga-68) must be removed from OITL continuously and placed in the waste radioactivity decay area at room (LU-103; just behind the hot cells at Radiopharmacy lab). Both liquid and solid waste generated

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from short lived isotope or PET isotope (vials, needles, syringes and gloves) will be transported through the hatch at DU-034 (hatch is situated between DU-034 and corridor DU-047) to LU-103 (Appendix-I) and should be kept at LU-103 until decayed. During this transfer of waste from OITL's hatch at DU-034 and corridor DU 047, two persons must present. One person from Inside DU-034 will transfer the waste container or bags to another person at corridor-DU047. A dedicated trolley will be used for transferring the waste from DU-047 to LU-103 (for short-lived PET isotopes generated waste). This will minimize any possible risk to contaminate the floor of DU-034 and corridor DU-047. The storage space for short-lived isotope at LU-103 will have lead shielding of appropriate thickness (10 HVL) to prevent radiation leakage. The radioactive waste will be stored for a minimum period of about 10 half-lives until complete decay. If no detectable radioactivity is found, the waste is then disposed of as non-radioactive medical waste at disposal area of Rikshospitalet. The logbook must be filled (logbook 133 for R&D/IMB-NMS) before disposal of any waste. Example in Appendix-II.

- IV. Radioactive wastes generated from working with radio-therapeutic isotopes with relatively longer half-life (Th-227, Lu-177 and Ac-225) than PET isotopes will be removed continuously from OITL (through hatch at DU-034 situated between corridor DU-034 and corridor DU-047) to Bayer's radioactive waste storage and disposal facility at Lysaker, Oslo. In this case, two persons will be also involved to transfer the waste through the hatch at DU-034 and corridor DU-047. A dedicated trolley will be used transfer the waste (generated from radio-herapeutic isotopes) to vehicle, which will carry the waste (generated from radio-therapeutic experiment) from IMB to Lysaker (Bayer's disposal area). There must be no box or bags of waste (active or non-radioactive active) present at corridor of DU-047. Head of OITL will make sure that all the waste (liquid, solid, animal carcass and radioactive animal housing related waste) generated from radio therapeutic isotopes are removed from facility and written in logbook (logbook 133 for R&D/IMB-NMS). It is the user's responsibility to remove dead radioactive animals from KPM to their own freezers in their premises (Bayer's storage facility at Lysaker).
- V. Dead animals, which were used for experimenting short-lived PET isotope labeled molecule, must be separated from other radioactive waste (solid and liquid) and placed in yellow bags. These are marked with isotope and date. The bags are then taken to the freezer (placed at LU-005) for storing. The animals (exposed with short-lived PET-isotopes) are kept in refrigerator until they are no longer radioactive, and a minimum of 10 half-lives. This applies for work with PET isotopes only (F-18, C-11, Ga-68 and Zr-89). Other isotopes (therapeutic isotope from Bayer) related biological wastes must be removed from animal facility immediately after any kind of experiment. The Head of OITL will ensure that long lived isotope (Therapeutic isotope) exposed animal carcass are removed from lab and placed at Bayer's facility at lysaker on same day and information will be placed in log book (logbook 133 for R&D/IMB-NMS)
- VI. Decayed short-lived PET isotope exposed animal in refrigerator at LU-005 will be considered as normal biological waste. This normal non-radioactive biological waste will be disposed at Rikshospitalet under responsibility of OITL. This routine will ensure that there will be no waste disposal happen at IMB facility; therefore, no way of mix up any waste with IMB's wastes.

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- VII. Reusable equipment, like cages and bottles, must be clearly marked and checked for contamination before moved back to KPM. If any equipment is found to be contaminated during checkout, the equipment will be placed into quarantine. To exit the quarantine, the equipment will be checked again and found not to be contaminated.

Document History

Version	Description
001	Title: Radioactive waste management at microPET lab, KPM, UiO


5 REFERENCES

PET trace service manual

Veileder 2: Bruk av åpne radioaktive kilder i laboratorium

Veileder 10: Nukleærmedisin (NRPA)

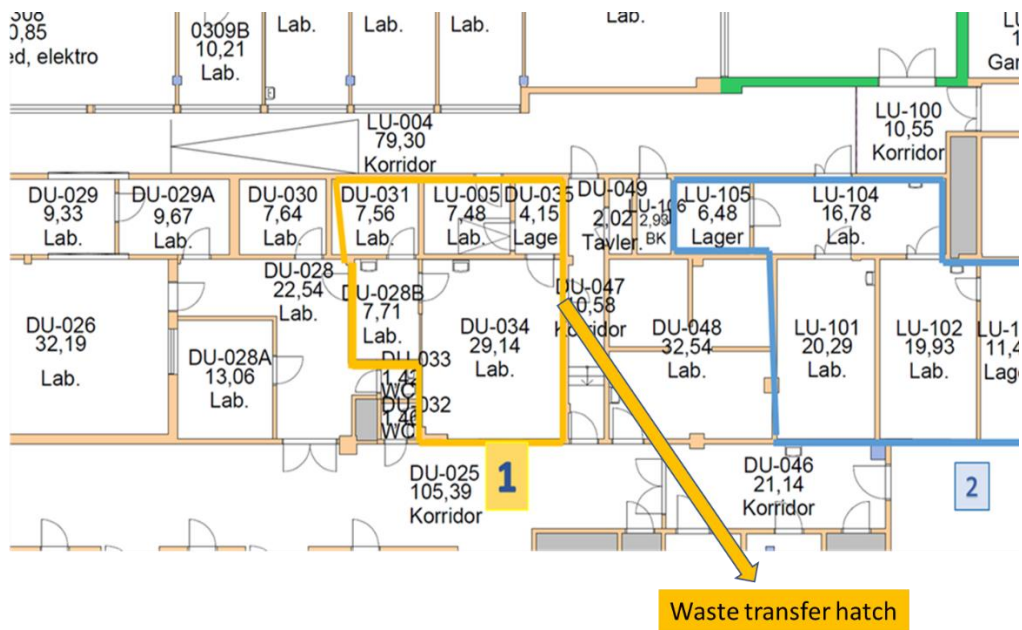
Forskrift om strålevern og bruk av stråling

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6 APPENDICES

Appendix	Doc. Id.	Title
1	PET-Trace Waste area	MicroPET lab map
2	Biological waste-IMB	Declaration form for risk- and biological waste

Appendix I: Molecular imaging lab (MIL) lab facility map map (active and inactive area)





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