LOW LEVEL WASTE REPOSITORY GUIDANCE NOTE FOR THE MINIMUM MONITORING REQUIREMENTS FOR RE-USABLE TRANSPORT CONTAINERS

Summary

This Guidance Note should be read in conjunction with the relevant LLW Repository Ltd IP-2 ISO Container Operational Documentation for the transport container identified as re-useable. This Guidance Note is intended to support the Container Design Operational Documentation by explaining the basis of the condition requirements and providing additional information.

Nothing in this Guidance Note shall be legally binding upon the Operator of the LLW Repository Ltd and the Terms and Conditions between the Operator and the Customer for the use of the LLW Repository Ltd supplied re-usable transport containers.

In the event of any conflict between the provisions of the Guidance Note and any LLW Repository Ltd IP-2 ISO Container Design Approval Conditions, the Container Design Approval Conditions shall prevail in all respects.

Issue Number		**2**
Issue Date		**05th January 2012**
From	**To**	
	Until	**Reviewed**
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Introduction

This Guidance Note details the requirements we expect from Consignors and Treatment Operators to ensure that the radiological clearance procedure for consignment of approved re-usable transport containers are robust, consistent and standardised.

Some re-usable transport containers, such as the new TC02, have been specifically designed to be re-used and can be thoroughly monitored both internally and externally (the transport container has been designed to be used on a “start clean”, “stay clean” philosophy and this is reflected through the monitoring protocols which are adopted). Other transport packages that have not been specifically designed with reuse in mind may be given permission for reuse in the future. Suggested monitoring regimes for each individual type of re-usable transport containers will be included in a separate *schedule*, this will include both the targeted and random monitoring that should be completed for each type of re-usable transport container.

The objective of this procedure is to form the baseline expected for re-usable transport container monitoring that will then ensure compliance with the radiation and contamination limits set in the Carriage of Dangerous Goods Regulations and the Ionising Radiations Regulations 1999 (IRRs). Particular attention is directed towards the need to ensure that no contaminated re-usable transport container leaves site in order to prevent, the public from being possibly exposed and, the possible contamination of the environment.

Purpose

The purpose of this guidance is to provide the overarching principles for radiological monitoring procedures, limits, equipment and reporting procedures for the consignment, transport and maintenance of re-usable transport containers. This Guidance Note does not give specific company, site or operational procedures for radiological monitoring of the re-usable transport containers. It does though provide the principles required to ensure compliance with the Regulations identified above.

The procedure will provide traceability to all monitoring that will help to identify and trend areas of fixed and loose contamination. This minimum monitoring requirement will provide confidence to customers using the re-usable transport containers that when received on site, an adequate and satisfactory level of monitoring has been carried out to minimise as far as is reasonable practicable the spread of contamination between customer sites. LLWR accept that where there is a greater risk of contamination at specific sites, more detailed monitoring may be required.

PART A – Radiological General

A1 Re-usable transport containers (and other transport containers) have been designed to be used in support of the segregated waste service by facilitating the transport of waste between the waste producers and treatment sites.

A2 If a package is to be re-used, it should follow the philosophy of "*start clean*" and as far as is reasonably practicable "*stay clean*". The monitoring process described below will enforce this philosophy (as the reuse of these containers must ensure that the cross contamination between customer sites and treatment sites does not occur).

A3 If a transport container has been designated for re-use, the preferable mode of operation is for the transport container to be placed in a non designated area (and the sealed waste items are then transferred out of controlled areas for loading into the clean transport container).

A4 The internals of the TC02 have been designed to be easily accessible and free from trip hazards allowing a HP monitor to access the internal of the package to conduct thorough monitoring for receipt and dispatch surveys. This may not be the case for other re-usable transport containers that haven't been specifically designed for reuse, however using long reach probes and remote swabbing is also acceptable providing that adequate access can be made to the required monitoring points.

A5 Where a problem with any monitoring is found, this should be highlighted to the Transport and Logistics team at the earliest opportunity to enable a satisfactory solution to be developed.

PART B – Dispatching Process

B1 Any re-usable transport container must be dispatched in compliance with the requirements of the Carriage of Dangerous Goods and use of transportable Pressure Equipment Regulations at all times. It is imperative that whilst consigning any re-usable transport container to any site, the requirements of the Ionising Radiation Regulations 1999 are adhered to and that doses are restricted as far as is reasonable.

B2 The re-usable transport container could be dispatched in 2 distinct modes, *Full* (containing radioactive waste) and *Empty* (not containing radioactive waste). The requirements for dispatch and monitoring in each of the two modes are described below.

B3 **Monitoring of FULL Transport Containers for Radiation and Contamination Prior to Dispatch**

B3.1 Where practicable the clean re-usable transport container (confirmed by receipt monitoring) should remain in a clean (non-controlled) area. If not practicable, the re-usable transport container and lid should be placed on prepared areas which have been decontaminated and monitored to ensure they are free of contamination. The area should also be free of airborne contamination to prevent any settling of radioactive material onto the surfaces of the re-usable transport container.

B3.2 The outer surfaces of each sealed waste item (including associated lifting equipment) should be monitored for loose contamination, levels of loose contamination levels cannot exceed 4.0 Bq/cm^2 beta gamma and low toxicity alpha and 0.4 Bq/cm^2 other alpha. Where loose contamination is found on the outer layer of any waste item, it must be decontaminated or re-wrapped prior to loading into the re-usable transport container and recorded on the relevant monitoring form.

B3.3 The lid should be placed on a support so that probe monitoring of the underside can be completed to ensure that it has not picked up contamination, levels cannot exceed 4.0 Bq/cm^2 beta gamma and low toxicity alpha and 0.4 Bq/cm^2 other alpha.

B3.4 If the re-usable transport container is to be consigned as UN2910 then the radiation levels at any point on the external surface must not exceed 5μSv/h above background.

B4 Monitoring of EMPTY Transport Containers for Radiation and Contamination Prior to Dispatch

B4.1 When a container is to be shipped empty (i.e. not containing radioactive waste), the container and associated lifting equipment must be monitored by probe and swab to ensure there is no fixed or loose contamination above 4.0 Bq/cm^2 beta gamma and low toxicity alpha and 0.4 Bq/cm^2 other alpha.

B4.2 The contamination monitoring should be carried out in a low background area. Where contamination is found, this must be reported to the Transport and Logistics team at the earliest opportunity to enable a satisfactory solution to be developed.

B4.3 The empty re-usable transport container may be consigned under either of the following classifications for transport depending on the specific site standards and systems.

B4.4 If the re-usable transport container is to be consigned as **CLEAN** then the radiation levels at any point on the external surface must not exceed 1 µSv/h above background.

- **CLEAN** meets the requirements of site clearance and by subject to the provisions of the Carriage of Dangerous Goods Regulations.

B4.5 If the re-usable transport container is to be consigned as **UN2908**, then the maximum radiation reading at any point on the external surface should not exceed 5 µSv/h.

- **UN2908**, Radioactive Material, Excepted Package, Empty Packaging[1]

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[1] when being consigned as UN2908, the package and associated equipment must be confirmed to be decontaminated to the clearance levels as stated in this document

PART C – Receipt Process

C1 The receipt process is designed to ensure that there have been no abnormal occurrences during transport and to ensure that the re-usable transport container is being used correctly and compliantly.

C2 As with the dispatch process, the re-usable transport container could be received in 2 distinct modes; *Full* (containing radioactive waste) and *Empty* (not containing radioactive waste). The requirements for decontamination and monitoring in each of the two modes are described below.

C3 **Monitoring of FULL Reusable Transport Containers for Radiation and Contamination on Receipt**

When a re-usable transport container is to be received FULL i.e. containing waste, the purpose of the receipt survey is to ensure that there has been no leakage or escape of radioactive material during the course of transport from either the waste box(es) and/or wrapped item(s). The receipt survey will also ensure that the waste has not moved during transport or that the dose rate has not increased beyond acceptable transport limits. If this has occurred, the Transport and Logistics team must be informed immediately.

C3.1 All accessible surfaces of the external surfaces of the re-usable transport container must be swabbed to ensure there is no loose contamination above 4.0 Bq/cm^2 beta gamma and low toxicity alpha and 0.4 Bq/cm^2 other alpha.

C3.2 Check the serial number and confirm that the correct re-usable transport container has been received.

C3.3 Check the radiation levels on all sides and base to confirm that they are consistent with those stated on the dispatch paperwork.

C3.4 To enable full receipt monitoring of the re-usable transport container internals to be carried out, the waste box(es) or wrapped item(s) and the stillage(s) must first be unloaded. Once all items have been removed, the internals of the re-usable transport container can be accessed to facilitate monitoring. Checks of both fixed and loose contamination levels should be completed, levels should not exceed 4.0 Bq/cm^2 beta gamma and low toxicity alpha and 0.4 Bq/cm^2 other alpha.

C3.5 The receipt survey should confirm the activity levels described in Section B for the dispatch survey. Any abnormal differences in levels should be reported to the Transport and Logistics team.

C3.6 The receipt monitoring should also confirm the dose rates are as have declared for dispatch. Any discrepancies should prompt a temporary suspension of operations and be reported to the Transport and Logistics team.

C4 Monitoring of EMPTY Transport Containers for Radiation and Contamination on Receipt

C4.1 When a re-usable transport container is to be received as EMPTY i.e. not containing radioactive waste, the container and associated equipment must be monitored to verify the previous dispatch monitoring.

C4.2 When an empty re-usable transport container arrives on a customers site, checks of the internal and external contamination levels should be performed (to include associated lifting equipment that may be inside the container) to confirm that the previous site dispatching site has enforced the 'start clean/stay clean' philosophy.

C4.3 As comprehensive dispatch monitoring will have been carried out and declared; only reassurance monitoring is required on receipt of an empty re-usable transport container.

C4.4 All surfaces must be monitored to ensure there is no fixed or loose contamination above 4.0 Bq/cm^2 beta gamma and low toxicity alpha and 0.4 Bq/cm^2 other alpha.

C4.5 Check the serial number and confirm that the correct re-usable transport container has been received.

C4.6 Check the radiation levels on all sides and base to confirm that they are consistent with those stated on the dispatch paperwork.

PART D – Additional Intermediate Loading Process

D1 Where the re-usable transport container is being received at a secondary customer site to facilitate the additional intermediate loading of waste box(es), stillage(s) etc, verification monitoring will be required to satisfy the receiving site that they are not accepting a non-compliant re-usable transport container onto their site.

D2 The incoming partially full re-usable transport container will have been consigned as FULL described in Section B and will contain either wrapped item(s) or waste box(es). Receipt monitoring should be completed on the re-usable transport container (as described in section C3 – full) should be completed.

PART E – Monitoring Form

E1 Specimen monitoring form types that provide a suggested record of the random and systematic monitoring required for each type of reusable transport containers are included as associated *Schedules*. The receiving/consigning site are not obliged to use these forms, but must ensure that whatever monitoring they conduct is recorded clearly and concisely so that the receiving site can readily check the monitoring completed.

E2 Where the monitoring form specifies more than 1 point to be taken at random, the random points should be taken in different halves or quadrants of the container and vary between the top and bottom of a side if applicable.

E3 The specific point measured by swab should be marked in the diagrams with the number of the point as described on the form. As probes will be used to monitor the whole area for fixed contamination, the highest reading should always be recorded.

E4 In all cases, swabs should be taken from the highest points of fixed contamination identified.

E5 Where a re-usable transport container is received and the random points have been marked, different random points should be then used for the subsequent dispatch survey. The forms must accompany all consignment paperwork.

For any queries please contact the LLW Repository Ltd Transport and Logistics Team www.transportandlogistics@llwrsite.com