

## Cautions Regarding Interim Storage of Identified Radiation Sources

It would be desirable for the following cautions to be observed to minimize the impact on the surrounding environments from temporarily storing identified radiation sources, namely soil, sand, and sludge (hereafter, “waste”) collected while cleaning rain gutters and culverts.

### 1. Classification of interim storage methods

Interim storage methods for waste include: (1) storing waste collectively underground; (2) piling the waste; and (3) enclosing waste in concrete structures. The appropriate storage method should be selected based on local circumstances.

### 2. Cautions regarding the method of storing waste collectively underground

- (1) Waste storage shafts should be drilled with care to avoid striking an aquifer.
- (2) Make an effort to prevent water from seeping in by lining the bottom and sides of the shaft with impermeable sheets or similar material in advance.
- (3) Waste should be packed in water resistant material and placed in the shaft.
- (4) Cover the shaft within the day with soil which is at low risk of containing radioactive materials (such as soil from more than several centimeters below the surface of the ground). As a rule of thumb, radiation is reduced to approximately 25% by a soil covering of 10 cm, to approximately 15% by 15 cm and to about 8% by 20 cm. (Refer to Fig. 1.)<sup>1</sup>
- (5) Cover the shaft with impermeable sheets, tent, roof or similar structure to prevent rainwater from seeping into the shaft. Construct drainage ditches to drain off rainwater as needed. Be careful of gas emission if the waste contains large amounts of organic material.
- (6) Alert people to the fact that the cover soil is not to be dug up.

---

<sup>1</sup> Source: “External Effective Dose Conversion Factors for Activity Concentration Limit Evaluation for Disposal of Radioactive Waste” (issued by the Japan Atomic Energy Agency in 2008)  
These values were estimated by assuming a source size of radius 500 m. The reduction in radiation for smaller-scale storage will be less than the values shown here.

- (7) Guard the waste against dispersal.
- (8) It would be desirable to periodically measure the dose rate.<sup>2</sup>

### 3. Cautions regarding the piling of waste

- (1) If piling on earth, make an effort to prevent water from seeping through by lining the ground where the waste is to be piled with impermeable sheets or similar material, in advance.
- (2) Waste should be packed in water resistant material and placed atop the impermeable sheets or similar equipment.
- (3) Piles should be covered within the day with soil which is at low risk of containing radioactive materials. Enclosures should be built at this time, or similar measures taken, to prevent the piles from collapsing. As a rule of thumb, radiation is reduced to approximately 25% by a soil covering of 10 cm, to approximately 15% by 15 cm and to about 8% by 20 cm (Refer to Fig. 1.).
- (4) Cover the piles with impermeable sheets, tent, roof or similar structure to prevent rainwater from seeping into the shaft. Construct drainage ditches to drain off rainwater as needed. Be careful of gas emission if the waste contains large amounts of organic material.
- (5) Take measures to restrict entry through measures such as roping off the piles.
- (6) Guard the waste against dispersal.
- (7) It would be desirable to periodically measure the dose rate.<sup>2</sup>

### 4. Cautions regarding the enclosing waste in concrete structures

- (1) If storing on the earth, make an effort to prevent water from seeping through by lining the ground where the waste is to be stored with impermeable sheets or similar material in advance.
- (2) Waste should be packed in water resistant material and placed atop the impermeable sheets or similar equipment.
- (3) Enclose the waste in a concrete structure. As a rule of thumb, radiation is reduced to approximately 10% by a concrete structure 15

---

<sup>2</sup> Dose must be managed such that the dose of residents in the vicinity of the storage does not exceed 1 mSv/year in accordance with the direction "On the Present Policy for Securing Safety Related to Processing and Disposal of Waste Resulting from the Accident at TEPCO's Fukushima Dai-ichi NPS" (issued by the Nuclear Safety Commission of Japan on June 3, 2011).

cm thick (Refer to Fig. 2.)<sup>3</sup>.

- (4) Cover the concrete structures with impermeable sheets, tent, roof or similar structure to prevent rainwater from seeping into the shaft. Construct drainage ditches to drain off rainwater as needed. Be careful of gas emission if the waste contains large amounts of organic material.
- (5) Take measures to restrict entry through measures such as roping off the concrete structure.
- (6) Guard the waste against dispersal
- (7) It would be desirable to periodically measure the dose rate.<sup>2</sup>

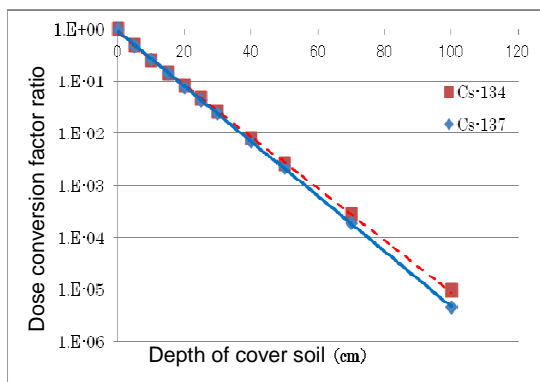


Fig. 1 Depth of cover soil and radiation shielding effect

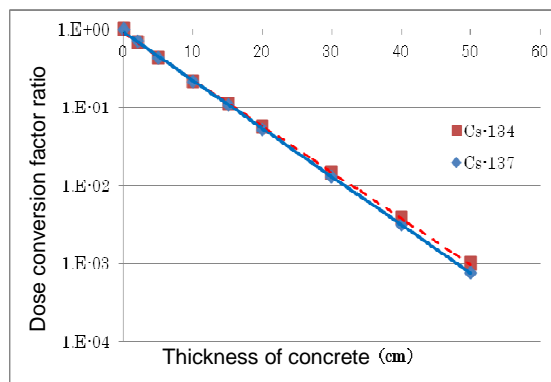


Fig. 2 Thickness of concrete and radiation shielding effect

<sup>3</sup> Source: "External Effective Dose Conversion Factors for Activity Concentration Limit Evaluation for Disposal of Radioactive Waste" (issued by the Japan Atomic Energy Agency in 2008)  
This value was estimated by assuming a source size of radius 500 m.  
The reduction in radiation for smaller-scale storage will be less than the values shown here.