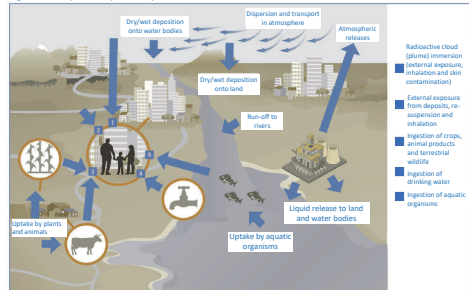


Figure V. Exposure pathways from releases of radioactive material to the environment



1. Move of radioactive plumes in the air
 - ✓ External exposure
 - ✓ Internal exposure (inhalation)
2. Deposition on the ground surface
 - ✓ External exposure
 - ✓ Internal exposure (re-suspension, inhalation)
3. Deposition on the ground surface, etc.
 - ✓ Internal exposure (transfer to foods and drinks)

Major exposure pathways to be assessed

- (i) External exposure from radioactive materials in plumes and internal exposure through inhalation thereof
- (ii) External exposure from radioactive materials deposited on the ground surface and internal exposure through ingestion of radionuclides that have transferred into foods and drinks
- (iii) Internal exposure through ingestion of radioactive materials that have transferred into marine products

In order to estimate exposure doses from radioactive materials released into the environment due to the accident, exposure modes are analyzed in the first place.

The figure above roughly shows exposure pathways in which radioactive materials move in the air in the form of a radioactive plume and reach people's residential areas. In this case, exposure occurs in the following two pathways: external exposure directly from a radioactive plume passing by and internal exposure through inhalation of radioactive materials in a plume.

Furthermore, when radioactive materials in a plume were deposited on the ground surface due to rain, etc., exposure occurs in the following two pathways. The first is external exposure due to radiation from radioactive materials deposited on the ground surface. The second is internal exposure through ingestion of agricultural products with deposited radioactive materials or ingestion of meat of livestock that ate such contaminated agricultural products. As exposure through ingestion of foods and drinks, the following two pathways are considered: internal exposure through ingestion of tap water or other drinking water containing radioactive materials and internal exposure through ingestion of fish into which radioactive materials that had moved into the ocean transferred.

There is also the possibility that radioactive materials deposited on the ground surface become re-suspended in the air and cause internal exposure through inhalation, but radiation effects through this exposure pathway are considered to be minor.

Given these, the major exposure pathways due to radioactive materials released into the air are as follows.

- (i) External exposure from radionuclides in the radioactive plumes
- (ii) Internal exposure from inhalation of radionuclides in the radioactive plumes
- (iii) External exposure from radionuclides deposited on the ground
- (iv) Internal exposure from ingestion of radionuclides in foods and water

[Relevant parts in the reports]

• UNSCEAR Report (prepared from paragraphs 65 to 66 on pages 45 to 46, Scientific Annex A (Japanese-language version) (Original English version: paragraphs 65 to 66 on pages 47 to 48), and paragraphs C3 to C7 on pages 148 to 149, Appendix C)

Included in this reference material on March 31, 2015