

United Nations Scientific Committee on the Effects of Atomic Radiation

NSCEAR

UNSCEAR Global Survey on Public Exposure

Topical Webinar: Past Activities and Accidents

Cameron Lawrence 13 May 2021



Past Activities and Accident – Scope

- Data relating to public exposure resulting from:
 - Military uses
 - Nuclear test sites
 - Global fallout
 - Legacy sites
 - Past industrial activities with NORM
 - Waste disposal
 - Past activities with artificial radionuclides
 - Nuclear and radiological accidents
 - Fukushima
 - Chernobyl
 - Mayak
 - Others
 - Sea disposal of radioactive wastes
- Exposures relating to the survey period 2007-present



Public Exposure from contaminated sites

- Long lived fission and neutron activation products
 - e.g. Cs-137, Cs-134, Sr-90, Co-60, Pu isotopes, Am-241, etc.
- Long lived natural radionuclides
 - e.g. Ra-226, U-238, etc.
- Gamma exposure to public
- From sites that are
 - Past industrial activities including waste disposal & sea dumping
 - Nuclear weapons test sites
 - Past nuclear and radiological accidents



Exposed Populations and Exposure Pathways

- Members of the public
 - General public, most exposed individuals and children
 - Exposed or potentially exposed
- Global fallout from atmospheric tests
 - General public



Environmental Measurements of Human Environment

- Releases to the environment
- Air dose rates
- Activity concentrations
 - Soil, building materials, industrial products and wastes
 - Air for inhalation assessments
 - Foods and drinking water
- Human measurements
 - Used to assess dose from whole body counting



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Methodology

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- UNSCEAR methodology as applied to other reports
 - Methodology as applied for external and internal public exposure with environmental radionuclides and long-term post-accident exposures
 - Fukushima, Chernoybl, UNSCEAR 2008 & UNSCEAR 2000
- Methodology updates where required
 - i.e. dose coefficients and model parameters
- Uncertainties and variables
 - As being developed for the project



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Data Required

- General data
 - Country, date, population & NCP details
- Essential data
 - Site information, location, area of contamination, contamination type, total inventory, type of radionuclides, environment type, source of contamination
 - Number of exposed individuals, average & collective effective doses, pathways of exposure, activity concentrations or surface density
 - References
- Data to be sourced from survey and literature



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References

- NCPs are in the best position to obtain nationally published references
- National reports relating to the status of legacy sites and estimates of public exposure
- Most recent reports even if they are prior to 2007
- Any other peer reviewed publications relating to sites



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Format of Survey – General Information

United Nations Scientific Committee on the Effects of Atomic Radiation		-
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	Do not modify the structure of this spreadsheet, as it will be processed automatically.	
General information		
Country information		
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Population [inhabitants]* (local, national or regional)		
Population (survey base)*		
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	ational contact person, registered online via the UNSCEAR survey platform, including name, institution and contact details (email/phone) to facilitate a	any fee
	provide further information or feedback, if needed, and who should be acknowledged in the final report.	
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Format of Survey – Site Information

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Version 1.1 PE-SG7 2021-02-23	Please read the furth	er instructions giver	as comments. They be	ecome visible when moving the mouse of	cursor on the cells	5.			
SURVEY OF SIT	ES AND AF	EAS CON	TAMINATE	WITH RADIONUCI	IDES DU	IE TO PA	ST ACTIVITIES OR AC	CIDENTS (2007-2020)	
Note: Describe only curren	tly contaminated s	ites from civil an	d military activities.	For sites that have been remed	iated, describe	only those whe	ere residual levels still demand furthe	r control or concern. There may be a need to have	multiple rows for the same site to prov
	(,	1							
Name of Site			Location		Contamin	ated Area	Short description of areas with localized radioactive material	Most affected environments	Origin and nature of contamination
Name of Site Add additional sites below list of main radionuclides	Country	State (region)		Geographical coordinate, or Plus Code or web link, e.g. https://www.google.com/mapsi@51.31 93855.30.1304812.9.85z	Londoroo	ated Area Volume of water body [km ³]	localized radioactive material	Most affected environments (i.e. 1. Terrestrial environments (indicate): (i) Natural (forest, steppe, desert, mountains, polar, etc.); (ii) Agricultural lands; (iii) Urban and industrial areas; 2. Freshwater environments (indicate): rivers. lakes. swamps, underground waters; 3.	
Add additional sites below list of	Country	State (region)		or web link, e.g. https://www.google.com/maps/@51.31	Land area	Volume of water body	localized radioactive material (e.g. tailings, buildings, temporal storages or disposal sites: number, characteristics,	(i.e. 1. Terrestrial environments (indicate): (i) Natural (forest, steppe, desert, mountains, polar, etc.); (ii) Agricultural lands; (iii) Urban and industrial areas; 2. Freshwater environments	Origin and nature of contamination (Kind of past activities at the site, accidents or other events that led to the radioactive
Add additional sites below list of main radionuclides	Country	State (region)		or web link, e.g. https://www.google.com/maps/@51.31	Land area	Volume of water body	localized radioactive material (e.g. tailings, buildings, temporal storages or disposal sites: number, characteristics,	(i.e. 1. Terrestrial environments (indicate): (i) Natural (forest, steppe, desert, mountains, polar, etc.); (ii) Agricultural lands; (iii) Urban and industrial areas; 2. Freshwater environments	Origin and nature of contamination (Kind of past activities at the site, accidents or other events that led to the radioactive
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	Radioactive material at the site or area												Year or time period	References to reports and open literature publications	Comments
Main	Total inventory			Activity surfa the site		Main Pathways of	Annual effe [m						for which provided data was obtained	Web links and files as attachments will be appreciated.	
radionuclides	[Bq]	Average	Minimum- Maximum	Average	Minimum- Maximum	exposure	Average	Minimum- Maximum	Average	Minimum- Maximum	Average	Minimum - Maximum	or refers to	File attachments should be uploaded as additional material on the platform.	
e.g. Cs-137					1	(/	/							
e.g. Sr-90					/	/	/								
e.g. U-238					/		/								



Report

- Data published in compiled tables and graphs
- Effective doses to members of the public from past activities and accidents
- Geographical/regional and temporal trends where available