

CONTENTS

1.	INTRODUCTION	1
1.1.	Background.....	1
1.2.	Objective	3
1.3.	Scope	3
1.4.	Structure	4
2.	GENERAL FEATURES OF OLD FACILITIES AND WASTE ..	6
2.1.	Reasons for retrieval of waste.....	6
2.2.	Facilities that may require unplanned or unexpected retrieval of waste.....	8
2.3.	Common characteristics of old facilities	8
2.4.	Common characteristics of old waste.....	9
3.	DECISION MAKING AND PLANNING FRAMEWORK	10
3.1.	International conventions and agreements.....	12
3.2.	National legislation and stakeholder involvement.....	12
3.3.	Availability of waste acceptance criteria	13
3.3.1.	Need for waste acceptance criteria	13
3.3.2.	Additional considerations for waste acceptance criteria	14
3.4.	Availability and maturity of technologies	15
3.5.	Staff and labour competencies	16
3.6.	Existing waste management facilities.....	16
3.7.	Funding	17
4.	INITIAL CHARACTERIZATION OF FACILITIES AND WASTE.....	18
4.1.	Objectives and inherent limitations of initial characterization.	18
4.2.	Characterization impact on starting retrieval activities.....	20
4.3.	Limiting the scope of initial characterization	20
4.4.	Collection and processing of existing documentation	21
4.4.1.	Documentation for facilities and buildings.....	21
4.4.2.	Documentation for the waste to be retrieved.....	22
4.4.3.	Documentation for operating history	23

4.5.	Supplemental investigations and measurements	23
4.5.1.	Supplemental investigations related to facilities and buildings	24
4.5.2.	Supplemental investigations related to waste.....	24
5.	PLANNING ASPECTS OF WASTE RETRIEVAL	25
5.1.	Safety and environmental protection considerations.....	25
5.2.	Technological aspects of retrieval.....	26
5.3.	Technological aspects of characterization and sorting.....	27
5.4.	Technological aspects of processing.....	27
5.5.	Waste acceptance criteria	28
5.6.	Waste retrieval plan	28
6.	WASTE RETRIEVAL TECHNIQUES	31
6.1.	Planning the retrieval.....	32
6.2.	Dose rate control	33
6.3.	Contamination control.....	33
6.4.	Access to the waste.....	35
6.5.	Waste retrieval	35
6.6.	Retrieval of in situ conditioned waste	40
6.7.	Temporary storage	41
6.8.	Worker radiation exposure (ALARA) considerations	42
6.8.1.	Assessment of the radiation and contamination hazards.....	43
6.8.2.	Non-radiological hazards	46
6.8.3.	Selecting the right tools for the job	46
6.9.	Management of residual contamination	48
7.	TECHNIQUES FOR WASTE SEGREGATION AND CHARACTERIZATION.....	49
7.1.	Waste segregation.....	50
7.1.1.	Establishing criteria for waste segregation.....	50
7.1.2.	Initial segregation during waste retrieval	51
7.1.3.	Segregation techniques and facilities.....	51
7.2.	Waste characterization.....	53
7.2.1.	Waste characterization techniques after segregation... ..	53
7.2.2.	Radiological characterization.....	55
7.2.3.	Chemical characterization.....	68

8.	PACKAGING, STORAGE AND TRANSPORT OF WASTE AFTER RETRIEVAL	69
8.1.	Packaging.....	69
8.2.	Storage.....	70
8.3.	Transport.....	72
9.	RETRIEVED WASTE TREATMENT AND CONDITIONING .	72
10.	CONCLUDING REMARKS	89
	REFERENCES	91
	ANNEX I: CANADA	99
	ANNEX II: ESTONIA	108
	ANNEX III: FRANCE	114
	ANNEX IV: HUNGARY.....	128
	ANNEX V: INDIA.....	144
	ANNEX VI: RUSSIAN FEDERATION.....	148
	ANNEX VII: UNITED KINGDOM	155
	CONTRIBUTORS TO DRAFTING AND REVIEW	161