ERRATA

Corrections to	published	RIFE reports
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	Page, Section	Comment
RIFE 24, 2018	Page 47, Figure 2.5	The 2018 ⁹⁹ Tc value for Ribble Estuary Shrimp should be 0.12 Bqkg ⁻¹ (incorrectly reported as 0.77 Bqkg ⁻¹). This is plotted correctly in Figure 2.5, RIFE 25.
	Page 57, Figure 2.11	The 2018 ⁹⁹ Tc value at Bradwell should be <6.5 Bqkg ⁻¹ . This is plotted correctly in Figure 2.11, RIFE 25. The 2017 and 2018 ⁹⁹ Tc values for the Isle of Scilly should be 2.8 and 4.7 Bqkg ⁻¹ , respectively. These are plotted correctly in Figure 2.11, RIFE 25. Further data for Isle of Scilly are presented below.

Year	Location	Material	No. of	Mean rad	dioactivity co	ncentration ((fresh), Bq ko	g ⁻¹	
			sampling observations	⁶⁰ Co	⁹⁵ Zr	⁹⁵ Nb	⁹⁹ Tc	¹⁰⁶ Ru	^{110m} Ag
2017	Isle of Scilly	Seaweed	1	<0.76	<0.86	<0.44	2.8	<4.0	<0.72
2018	Isle of Scilly	Seaweed	1	<0.55	<0.70	<0.36	4.7	<3.4	<0.53
Year	Location	Material	Material No. of		lioactivity co	ncentration ((fresh), Bq kg	g ⁻¹	
			sampling observations	¹²⁵ Sb	¹³⁴ Cs	¹³⁷ Cs	¹⁴⁴ Ce	¹⁵⁵ Eu	²⁴¹ Am
2017	Isle of Scilly	Seaweed	1	<2.4	<0.64	<0.50	<1.5	<0.75	<0.54
2018	Isle of Scilly	Seaweed		<2.1	<0.48	<0.40	<1.8	<0.84	<0.57

All measurements are made on behalf of the Environment Agency

Page 74/75, Table 2.2a	The footnotes in the table have been applied incorrectly. Footnotes d and f should apply to Ribble Estuary Shrimps Footnotes e should apply to Ribble Estuary Mussels Footnote g should apply to Freshwater from Ulnes Walton
Table 2.3b and Table 2.10	The Beta radiation dose rates reported in Tables 2.3b and 2.10 are incorrectly presented. Corrected data presented below.
	The paragraph "The equivalent dose to skin" (page 45)
	Should read "The equivalent dose to skin as a result of fishermen handling their fishing gear (which is potentially contaminated with radioactivity) was 0.030 mSv in 2018."
	The sentence "In 2018, the skin doses to a fisherman from handling fishing gear" (Page 54)
	Should read "In 2018, the skin doses to a fisherman from handling fishing gear (including a component due to naturally occurring radiation), and a bait digger and shellfish collector from handling sediment, were 0.13 mSv and 0.064 mSv, respectively (Table 2.17)"
	These revised doses apply to relevant parts of Tables 1.4, 2.1 and 2.17.

Comment

Location	Material or ground type	No. of sampling observations	µGy h-1	Vessel or location	Type of gear	No. of sampling observations	Mean beta dose rate in tissue, µSv h ⁻¹
Mean beta do	se rates		µSv h-1	101	Nets	1	<0.084
Springfields	Fishing net	1	<0.089	111	Nets	1	<0.083
Springfields	Tarpaulin	1	<0.090				
	· · · · ·			South 1	Lobster pots	1	0.12
				South 2	Lobster pots	1	<0.092
				South 3	Lobster pots	1	<0.092
				South 4	Lobster pots	1	<0.092

0	
Page 109, Table 3.2(a)	The Gross beta values in freshwater were omitted. These are presented below.

Location	Gross beta, Bq I-1
Loch Calder	0.090
Loch Shurrery	0.048
Loch Baligill	0.048
Heldale Water	0.060
	0.000

Page 112, Table 3.4(a)

The 2018 activity concentration data for Seaweed from Bognor Rock were omitted. These are presented below.

Table 3.4(a) Concentrations of radionuclides in aquatic plants near Winfrith, 2018							
Material	Location	No. of	Mean radioactivity concentration (fresh), Bq kg ⁻¹				
		sampling observations	⁶⁰ Co	⁹⁹ Tc	¹³⁷ Cs	²⁴¹ Am	
Marine samples							
Seaweed	Bognor Rock	2E	<0.57	<1.7	<0.41	<0.44	

E Measurements labelled "E" are made on behalf of the Environment Agency,

Page 115, 121	Page 115. The key point for Dungeness should read "Gaseous discharges of tritium and carbon-14 decreased, and liquid discharges of tritium increased and sulphur-35 decreased, from Dungeness B in 2018"
	Page 121. The sentence starting "Discharges of tritium" should read "Discharges of tritium increased and sulphur-35 decreased (both by small amounts) from Dungeness B"
Page 151, Figure 5.1	The caption descriptor should read "including discharges to Silchester sewer and Aldermaston Stream".

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Page 176, Figure 6.1 The plot for Cardiff is incorrect, it is presented correctly below.



Page 209, Table 8.12Table 8.12 was omitted from RIFE 24, these data are presented
below.

The paragraph "SEPA took a series of marine sediment and seawater..." Should be replaced by

"In 2018, SEPA took a series of marine sediment and seawater samples from across Scotland and the results are given in Table 8.12. All radionuclides were reported as less than values in seawater. Tritium was positively detected in two seawater samples from Cloch Point. Caesium-137, europium-155 and americium-241 were positively detected in some sediment samples. The results are generally consistent with those to be expected from measurements at nuclear licensed sites in this report (see, for example, Section 3). Overall, the results support the concept of a reducing trend in concentration with distance from the Sellafield site, albeit confounded by natural variability due to sediment type."

Comment

Table 8.12 Concentrations of radionuclides in marine sediments and seawater - background survey inScotland, 2018a

Sample	Sample source	No. of	Mean ra	adioactivi	ty concer	itration, E	8q kg ⁻¹ (di	y) ^b				
location and type		sampling observ- ations	³ Н	⁶⁰ Co	⁹⁵ Nb	¹¹⁰ Ag	¹²⁵ Sb	¹³⁷ Cs	¹⁵⁵ Eu	²⁴¹ Am	Gross alpha	Gross beta
Marine Sedin	nents											
Firth of Forth	Lower Taylorton	1	<5.0	<0.14	<8.7	<0.33	<0.40	4.4	<0.41	0.81	220	1700
Firth of Forth	Bannockburn	1	<5.0	<0.13	<7.8	<0.32	<0.37	5.3	<0.29	0.82	220	1800
Firth of Forth	Fallin	1	<5.0	<0.15	<8.4	<0.34	<0.43	6.9	<0.32	1.1	250	2100
Firth of Forth	Devon Confluence	1	<5.0	<0.14	<5.3	<0.33	<0.38	13	2.2	1.6	25	2000
Forth Estuary	Swing Bridge	1	<5.0	<0.10	<4.8	<0.19	<0.23	3.2	<0.26	<0.29	220	1500
Firth of Clyde	NW Cloch Point	1	<5.0	<0.11	<7.0	<0.26	<0.31	14	<0.21	4.3	190	1400
Firth of Clyde	West Cloch Point	1	<5.0	<0.12	<7.6	<0.28	<0.40	29	<0.30	6.80	280	1600
Inner Clyde	Leven Confluence	1	<5.0	<0.10	<3.1	<0.13	<0.15	2.0	<0.19	<0.18	83	550
Inner Clyde	Dalmuir	1	<5.0	<0.10	<6.2	<0.23	<0.31	15	<0.23	0.8	82	1200
Inner Clyde	Kelvin	1	<5.0	<0.13	<8.9	<0.33	<0.44	38	<0.28	1.6	110	1200
Seawater												
Firth of Forth	Lower Taylorton	1	<1.0	<0.10	<0.24	<0.10	<0.16	<0.10	<0.11	<0.10		
Firth of Forth	Bannockburn	1	<1.0	<0.10	<0.23	<0.10	<0.12	<0.10	<0.10	<0.10		
Firth of Forth	Fallin	1	<1.0	<0.10	<0.19	<0.10	<0.14	<0.10	<0.11	<0.10		
Firth of Forth	Devon Confluence	1	<1.0	<0.1	<0.25	<0.10	<0.15	<0.10	<0.14	<0.10		
Forth Estuary	Swing Bridge	1	<1.0	<0.10	<0.26	<0.10	<0.15	<0.10	<0.13	<0.10		
Firth of Clyde	NW Cloch Point	1	1.1	<0.10	<0.16	<0.10	<0.14	<0.10	<0.10	<0.10		
Firth of Clyde	West Cloch Point	1	1.4	<0.10	<0.17	<0.10	<0.14	<0.15	<0.10	<0.12		
Inner Clyde	Leven Confluence	1	<1.0	<0.10	<0.13	<0.10	<0.13	<0.10	<0.11	<0.10		
Inner Clyde	Dalmuir	1	<1.0	<0.10	<0.17	<0.10	<0.18	<0.10	<0.16	<0.10		
Inner Clyde	Kelvin	1	<1.0	<0.10	<0.13	<0.10	<0.13	<0.10	<0.10	<0.10		

Results are available for other radionuclides detected by gamma spectrometry. All such results are less than the limit of detection Except for seawater where units are $Bq l^{1}$ а

b

Page, Section	Comment
Appendix 1, page 24, Table X2.2	The consumption and occupancy rates for the Sellafield M (Sellafield fishing community 2014-2018) group should read:
	 20 kg y⁻¹ Cod 35 kg y⁻¹ Other fish 11 kg y⁻¹ Crabs 14 kg y⁻¹ Lobsters 10 kg y⁻¹ Other crustaceans 7.6 kg y⁻¹ Winkles 4.2 kg y⁻¹ Other molluscs 870 hours y⁻¹ over mud and sand
	The sentence "For molluscs (winkles and other molluscs)" (page 52) should read
	"For molluscs (winkles and other molluscs), the overall consumption rates were unchanged in the 2018 and decreased in the 2014–2018 datasets."
	The revised doses to this group are given below. They apply to the relevant portions of Tables 1.4, 2.17 and 7.1. Table 2.16 has been corrected for RIFE 25 onwards.
	The sentence "The doses from artificial radionuclides to people" (page 53) should read
	"The doses from artificial radionuclides to people, who consum a large amount of seafood, were 0.066 mSv (0.082 mSv in 2017 and 0.072 mSv (0.085 mSv in 2017) using the annual and five- year rolling average habits data, respectively, in 2018."
	The sentence "Taking artificial and enhanced natural radionuclides together" (page 53) should read
	Taking artificial and enhanced natural radionuclides together, the source specific doses were both 0.44 mSv (values are rounded to two significant figures) for the both the annual and five-year rolling average habits data.

^f The dose due to nuclear industry discharges was 0.072 mSv
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Exposure, mSv per year

Seafood

(nuclear

0.044

industry discharges) Seafood

discharges)

(other

0.33

Other local External

radiation

intertidal

0.028

areas, river banks or fishing gear

from

food

-

Intakes of

sediment

and water

-

Gaseous

plume

related

-

pathways

Total

0.40^f

Representative person

Source specfic doses Seafood consumers

Local seafood consumers (habits averaged 2014-18)

Direct radiation

from site

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	Page, Section	Comment
RIFE 23 2017	Page 13, Technical summary	The two sentences starting "In Wales, … " should be replaced with "In Wales, the representative person who received the highest dose from permitted releases of radioactivity consumed locally produced food at Trawsfynydd. The dose was 0.028 mSv in 2017."
	Page 42, Figure 2.2	The discharge data for non-uranic alpha (liquid) for 2017 was 9.43E+06 Bq, not zero. This is shown correctly in Figure 2.2 in RIFE-24
	Page 91, Table 2.12	The concentration of sulphur-35 in Half Moon Bay Seaweed was 9.4 Bq kg ⁻¹
	Page 108, Table 3.2(a)	The correct value for ²³⁸ Pu in cod collected from Scrabster is 0.00035 Bq kg ⁻¹ (fresh).
	Page 145, Table 4.6(a)	The concentration of polonium-210 in Morecambe Mussels was 41 Bq kg ⁻¹
	Page 149, Table 4.8(a)	The concentration of strontium-90 in Southwold Harbour sediments was <6.6 Bq kg ⁻¹
	Page 164, Section 5.2	Replace "Gaseous and liquid discharges may be made under permit but were both reported as nil in 2017." With "Gaseous and liquid discharges may be made under permit. Gaseous discharges were reported as nil in 2017."
	Pages 220-221, Tables 8.7 (footnote a) and 8.9, Page 207, section 8.8	In Table 8.7, footnote a, the concentrations of polonium-210 and radium-226 the values are <0.010 Bq l ⁻¹ and 0.012 Bq l ⁻¹ , respectively. The revised doses are given (in bold) in Table 8.9 (abbreviated below).
		Subsequently (on page 207) "The mean annual dose from consuming drinking water in the UK was assessed as 0.015 mSv in 2017 (Table 8.9). The highest annual dose was estimated to be 0.028 mSv for drinking water from Matlock, Derbyshire. The estimated doses were dominated by naturally occurring radionuclides and are similar to those in recent years."
Table 8.9 Dose	es from radionuclides in dri	nking water, 2017

Region	Mean Exposure, m	ISv per year	Maximum exposure, mSv per year		
	Man-made radionuclides	Naturally occurring radionuclides	All radionuclides	Location	All radionuclides
England	<0.001	0.028	0.028		0.028
UK	<0.001	0.014	0.015	Matlock, Groundwater, Derbyshire	0.028

Page 241, Table A2.1, The "Beta" category should read "All other radionuclides" Dounreay (Vulcan)

	Page, Section	Comment				
	Page 249, Table A2.4	The transfer data for Dounreay should read: Volume – 4.88E+02 m ³ , Alpha – 2.48E+09 Bq and Beta/Gamma – 4.54E+10 Bq				
RIFE-22 2017	Page 135, Table 4.2(b)	The mean gamma dose rate for	Lydney R	ocks should	l read 0.099	
	Page 246, Table A2.3	Niobium-84 should read Niobiu	ım-94.			
Previous RIFE reports (RIFE 9,11, 13-22)	Table A2.1	Gaseous discharges from Dou In April 2017, DSRL notified S information had been used in th and non-alpha discharges from DSRL have also undertaken a s monitoring arrangements. This in particulate flow measuremen discharges going back to 2003 f The revised discharge data for t from Dounreay are given in the supersedes the previously put from Dounreay" (RIFE 15-22	EPA that is the calculate the PFR f ite wide review ide t and the of for some review, all table below Dished "C	ion of gased acility. Furth eview of the entified impre- calculation of adionuclide pha, beta and ow. This tak Gaseous Dis	bus tritium her to this, ir discharge rovements of tritium groupings. d non-alpha ble also	
			Year	Revised	Revised % o	
				Discharges	annual limit	
		Prototype Fast Reactor: Tritium	2009	2.55E+11	2.4	
			2010	7.19E+10	<1	
			2011 2012	4.74E+10 9.56E+10	<1 <1	
			2012	6.18E+09	<1	
					4.7	
		Discharge authorisation revised 2014:	2014	8.05E+07	4./	
		Discharge authorisation revised 2014: Non-alpha	2014 2015	8.05E+07 1.21E+08		
				8.05E+07 1.21E+08 1.11E+08	4.7 7.9 6.6	
			2015	1.21E+08	7.9	
		Non-alpha	2015 2016	1.21E+08 1.11E+08	7.9 6.6	
		Non-alpha Discharge authorisation revised 2014:	2015 2016 2014	1.21E+08 1.11E+08 3.25E+11	7.9 6.6 1.9	
		Non-alpha Discharge authorisation revised 2014:	2015 2016 2014 2015	1.21E+08 1.11E+08 3.25E+11 4.33E+10	7.9 6.6 1.9 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a	2015 2016 2014 2015 2016 2003 2003	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04	7.9 6.6 1.9 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a	2015 2016 2014 2015 2016 2003 2005 2007	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a	2015 2016 2014 2015 2016 2003 2005 2007 2008	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a	2015 2016 2014 2015 2016 2003 2005 2007 2008 2009	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a	2015 2016 2014 2015 2016 2003 2005 2007 2008 2009 2010	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a	2015 2016 2014 2015 2016 2003 2005 2007 2008 2009 2010 2011	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04 7.43E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a	2015 2016 2014 2015 2003 2005 2007 2008 2009 2010 2011 2012	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04 7.43E+04 6.06E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a East Minor Sources: Alpha	2015 2016 2014 2015 2003 2005 2007 2008 2009 2010 2011 2011 2012 2013	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04 7.43E+04 6.06E+04 8.80E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a	2015 2016 2014 2015 2003 2005 2007 2008 2009 2010 2011 2012	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04 7.43E+04 6.06E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a East Minor Sources: Alpha	2015 2014 2015 2016 2003 2005 2007 2008 2009 2010 2011 2011 2012 2013 2003	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04 7.43E+04 6.06E+04 8.80E+04 1.31E+05	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a East Minor Sources: Alpha	2015 2014 2015 2016 2003 2005 2007 2008 2009 2010 2011 2011 2012 2013 2003 2005	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04 7.43E+04 6.06E+04 8.80E+04 1.31E+05 7.75E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a East Minor Sources: Alpha	2015 2014 2015 2016 2003 2005 2007 2008 2009 2010 2011 2011 2012 2013 2003 2005 2007	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04 7.43E+04 6.06E+04 8.80E+04 1.31E+05 7.75E+04 7.86E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a East Minor Sources: Alpha	2015 2014 2015 2016 2003 2005 2007 2008 2009 2010 2011 2011 2012 2013 2003 2005 2005 2007 2008	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04 7.43E+04 6.06E+04 8.80E+04 1.31E+05 7.75E+04 7.86E+04 6.27E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a East Minor Sources: Alpha	2015 2014 2015 2016 2003 2005 2007 2008 2009 2010 2011 2012 2013 2003 2005 2007 2008 2009 2009 2009 2009 2009	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04 7.43E+04 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04 6.38E+04 7.43E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	
		Non-alpha Discharge authorisation revised 2014: Tritium ^a East Minor Sources: Alpha	2015 2016 2014 2015 2003 2005 2007 2008 2009 2010 2011 2012 2013 2003 2005 2007 2008 2007 2008 2009 2010	1.21E+08 1.11E+08 3.25E+11 4.33E+10 4.46E+10 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04 7.43E+04 8.80E+04 1.31E+05 7.75E+04 7.86E+04 6.27E+04 9.24E+04 6.38E+04	7.9 6.6 1.9 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	

	Page, Sect	ion	Comment					
Previous RIFE reports (RIFE 15-22 inclusive)	Table A2.1		Gaseous Discharges from Dounreay In April 2017, DSRL notified SEPA that incorrect duct flowrate information had been used in the calculation of gaseous tritium and non-alpha discharges from the PFR facility. The revised data for tritium and non-alpha discharges are shown below. Values for 2014 are for the period May to December (see RIFE 21 for more details).					
				Year	Revised Discharges	Revised % c annual limit		
			Prototype Fast Reactor:	2009	2.55E+11	2.4		
			Tritium	2010	7.19E+10	<1		
				2011	4.74E+10	<1		
				2012	9.56E+10	<1		
				2013	6.18E+09	<1		
			Discharge authorisation revised 2014:	2014	8.05E+07	4.7		
			Non-alpha	2015	1.21E+08	7.9		
				2016	1.11E+08	6.6		
			Discharge authorisation revised 2014:	2014	3.25E+11	1.9		
			Tritium	2015	4.33E+10	<1		
				2016	4.46E+10	<1		
2016		ection 2	The two sentences starting "I should be replaced with "Dur 460 tonnes of spent oxide fue compared with an original tar reprocessing throughput since The reprocessing of spent Ma	ring the fir el was repursed of 433 e NDA too agnox fuel	hancial year, 2 cocessed in T 5 tonnes, and 6 ownership o 1 for 2015/16	2015/16, HORP, the highest of the site. was a total		
2016	Page 50, F		should be replaced with "Dur 460 tonnes of spent oxide fue compared with an original tar reprocessing throughput since	ring the fir el was repr rget of 433 e NDA too agnox fuel with an o is not cor	hancial year, 2 rocessed in T 5 tonnes, and 5 ownership of 1 for 2015/16 riginal perfor rect and no lo	2015/16, HORP, the highest of the site. was a total rmance targ onger applie		
2016	-		should be replaced with "Dur 460 tonnes of spent oxide fue compared with an original tar reprocessing throughput since The reprocessing of spent Ma 390 tonnes of fuel, compared of 477 tonnes." The footnote	ring the fir el was repr rget of 433 e NDA too agnox fuel with an o is not cor and caesi	nancial year, 2 cocessed in T 5 tonnes, and 5 ownership of 1 for 2015/16 riginal perfor rect and no lo um-137 disch	2015/16, HORP, the highest of the site. was a total rmance targ onger applie		
2016	-	igure 2.8	should be replaced with "Dur 460 tonnes of spent oxide fue compared with an original tar reprocessing throughput since The reprocessing of spent Ma 390 tonnes of fuel, compared of 477 tonnes." The footnote The carbon-14, strontium-90 2015 (figure 2.8) were plotted	ring the fin el was repur rget of 433 e NDA too agnox fuel with an o is not corr and caesir d incorrec	hancial year, 2 cocessed in T 5 tonnes, and b ownership of for 2015/16 riginal perfor rect and no lo um-137 disch tly, it is show	2015/16, HORP, the highest of the site. was a total rmance targ onger applie		
2016	Page 50, F	igure 2.8 ection 3.2	should be replaced with "Dur 460 tonnes of spent oxide fue compared with an original tar reprocessing throughput since The reprocessing of spent Ma 390 tonnes of fuel, compared of 477 tonnes." The footnote The carbon-14, strontium-90 2015 (figure 2.8) were plotted in Figure 2.9 in RIFE-22.	ring the fir el was repr rget of 433 e NDA too agnox fuel with an o is not corr and caesir d incorrec	hancial year, 2 cocessed in T 5 tonnes, and 5 ownership of 6 for 2015/16 riginal perfor rect and no lo um-137 disch tly, it is show wice).	2015/16, HORP, the highest of the site. was a total or mance targonger applies marge data for n corrected		
2016	Page 50, F Page 98, S Page 143, 7	igure 2.8 ection 3.2 Table	 should be replaced with "Dur 460 tonnes of spent oxide fue compared with an original tar reprocessing throughput since The reprocessing of spent Ma 390 tonnes of fuel, compared of 477 tonnes." The footnote The carbon-14, strontium-90 2015 (figure 2.8) were plotted in Figure 2.9 in RIFE-22. Replace Iodine-125 with iodin The concentration of plutoniu 	ring the finel was repurded was repurded of 433 e NDA too agnox fuel with an origination of the second seco	hancial year, 2 rocessed in T 5 tonnes, and 5 tonnes, and 6 ownership of 1 for 2015/16 riginal perfor rect and no lo um-137 disch tly, it is show wice). 40 in sedime n of "Externa	2015/16, HORP, the highest of the site. was a total mance targonger applies narge data for n corrected nt (pipeline) l radiation		
2016 Site	Page 50, F Page 98, S Page 143, 7 4.9(a)	igure 2.8 ection 3.2 Table	should be replaced with "Dur 460 tonnes of spent oxide fue compared with an original tar reprocessing throughput since The reprocessing of spent Ma 390 tonnes of fuel, compared of 477 tonnes." The footnote The carbon-14, strontium-90 2015 (figure 2.8) were plotted in Figure 2.9 in RIFE-22. Replace Iodine-125 with iodi The concentration of plutoniu was 109 Bq kg ⁻¹ . Devonport, the total dose of b from intertidal areas or river b <0.005, the table should read.	ring the finel was repurded was repurded of 433 e NDA too agnox fuel with an origination of the second seco	hancial year, 2 rocessed in T 5 tonnes, and 5 tonnes, and 6 ownership of 1 for 2015/16 riginal perfor rect and no lo um-137 disch tly, it is show wice). 40 in sedime n of "Externa	2015/16, HORP, the highest of the site. was a total mance targonger applies narge data for n corrected nt (pipeline) l radiation		

Devonport								
<i>Total dose</i> – all sources	Adult fish consumers	<0.005	<0.005	-	<0.005	-	-	

	Page, Section	Comn	nent					
Previous RIFE reports (RIFE 19–21 inclusive)	Table A2.1	Gaseous discharges from Chapelcross Replace the Tritium and all other radionuclides discharge limits with 7.50E+14 and 2.50E+09, respectively. The authorisation was revised 1 May 2013.						
RIFE-20 2014	201, Table 8.1	Iodine-129 data were entered incorrectly and should be removed with the exception of Alderney <i>Fucus vesiculosus</i> which was undertaken by radiochemistry. All other results reported as ¹²⁹ I were actually ¹³¹ I.						
RIFE-17-20 2014	86, Table 2.11	The u	nits of Mear	n beta dose	rate in tissue s	should rea	d uSvh ⁻¹	
RIFE-19 2013	183, Table 6.1	Cardiff, these are small changes to the <i>total dose</i> and source-specific assessments shown below. They apply to relevant parts of text, tables (1.2B, 1.4 and 6.1) and figure (1.3)						
Site	Exposed	Exposure,	mSv per year					
	population ^a	Total	Fish and shellfish	Other local food	External radiation from intertidal areas or the shoreline	Gaseous plume related pathways	Direct radiation from site	
<i>Total dose</i> – liquid discharges	Adult occupants over sediment	0.006	<0.005	-	0.005	-	-	
Source specific dose	s Prenatal children of seafood consumers	0.009	<0.005	-	0.009	-	-	
	41, Figure 2.13	The cobalt-60 liquid discharge datum for 2013 (Figure 2.13, RIFE-19) was plotted incorrectly, it is shown corrected in Figure 2.13 in RIFE-20						
	247, Appendix A2.1	Chapelcross, replace All other nuclides limit of 7.50E+09 Bq with 5.15E+09 Bq						
	109, Figure 3.5		d incorrectly		and ¹³⁷ Cs for 20 shown correcte		· ·	
	232, Table 8.15	Eu-155 results have been revised						
	Location	Samp	ole source		reported 155	Eu	revised ¹⁵⁵ Eu	
	Firth of Clyde	East	of Gull Point		<0.2	21	0.72	
	Firth of Clyde	SW c	of Lady Isle		<0	36	2.1	
	Firth of Clyde	East	of Johnston?	s Point	<0.2	22	0.81	
	Firth of Clyde	East	of Brodick		<0	39	1.8	
	Clyde Estuary	The H	Hole		<0.1	50	2.1	
	, ,	The Hole Kempoch Point						

33, Table 1.2

Some data was missing from Table 1.2 C (electronic version only), revised table shown below.

Site	Representative person ^a	Exposure, mSv			
		Total	Dominant contributions ^b		
C All sources					
Aldermaston and Burghfield	Infant milk consumer	<0.005	Milk, ³ H ^c , ¹³⁷ Cs ^c , ²³⁸ U		
Amersham	Local adult inhabitant (0–0.25km)	0.22	Direct radiation		
Barrow	Adult occupant on a houseboat	0.076	Gamma dose rate over sediment		
Berkeley and Oldbury	Adult occupant over sediment	0.010	Gamma dose rate over sediment		
Bradwell	Prenatal child of green vegetable consumers	<0.005	Green vegetables, potatoes, root vegetables, ¹⁴ C		
Capenhurst	Local inhabitant aged 10y (0–0.25km)	0.080	Direct radiation		
Cardiff	Infant milk consumer	0.010	Milk, ¹⁴ C, ³² P ^c		
Chapelcross	Infant milk consumer	0.024	Milk, ⁹⁰ Sr, ²⁴¹ Am ^c		
Derby	Adult consumer of locally sourced water	<0.005	Water, ⁶⁰ Co ^c		
Devonport	Adult fish consumer	< 0.005	Fish, ¹⁴ C, ²⁴¹ Am ^c		
Dounreay	Adult green vegetable consumer	0.012	Domestic fruit, potatoes, root vegetables ¹²⁹ I ^c , ²³⁸ Pu ^c , ^{239/240} Pu ^c , ²⁴¹ Am ^c		
Dungeness	Local adult inhabitant (0.5–1km)	0.021	Direct radiation		
Faslane	Adult occupant over sediment	< 0.005	Gamma dose rate over sediment		
Hartlepool	Local adult inhabitant (0–0.25km)	0.024	Direct radiation, gamma dose rate over sediment		
Harwell	Prenatal child of local inhabitants (0–0.25km)	0.010	Direct radiation		
Heysham	Adult mollusc consumer	0.028	Fish, gamma dose rate over sediment, molluscs, ¹³⁷ Cs, ^{239/240} Pu, ²⁴¹ Am		
Hinkley Point	Adult occupant over sediment	0.022	Gamma dose rate over sediment		
Hunterston	Prenatal child of local inhabitants (0.25–0.5km)	0.021	Direct radiation		
LLWR near Drigg ^e	Adult fish consumer	0.061 ^f	Crustaceans, fish, gamma dose rate over sediment, ¹²⁹ I ^c , ²¹⁰ Po		
Rosyth	Adult occupant over sediment	<0.005	Gamma dose rate over sediment		
Sellafield ^{e,g}	Adult occupant on a houseboat	0.076	Gamma dose rate over sediment		
Sizewell	Local adult inhabitant (0–0.25km)	0.021	Direct radiation		
Springfields	Adult occupant on a houseboat	0.060	Gamma dose rate over sediment		
Torness	Local adult inhabitant (0.5–1km)	0.020	Direct radiation		
Trawsfynydd	Infant local inhabitant (0.25–0.5km)	0.017	Milk, ¹⁴ C, ²⁴¹ Am		
Whitehaven ^e	Adult fish consumer	0.061 ^f	Crustaceans, fish, gamma dose rate over sediment, ¹²⁹ I ^c , ²¹⁰ Po		
Winfrith	Infant milk consumer	< 0.005	Milk, ¹⁴ C		
Wylfa	Adult occupant over sediment	< 0.005	Gamma dose rate over sediment		

Selected on the basis of providing the highest dose from the pathways associated with the sources as defined in A, B or C Pathways and radionuclides that contribute more than 10% of the total dose. Some radionuclides are reported as being at the limits of detection and based on these measurements, an upper estimate of dose is calculated

The assessed contribution is based on data being wholly at limits of detection The effects of gaseous discharges and direct radiation are not assessed for this site

The effects of liquid discharges from Sellafield, Whitehaven and LLWR near Drigg are considered together when assessing exposures at these sites because their effects are manifested in a common area of the Cumbrian coast

The doses from man-made and naturally occurring radionuclides were 0.040 and 0.021 mSv respectively. The source of naturally occurring radionuclides was a phosphate processing works near Sellafield at Whitehaven. Minor discharges of radionuclides were also made from the LLWR near Drigg into the same area

^g The highest exposure due to operations at Sellafield was to a person living on a houseboat near Barrow

RIFE-18 2012

Hinkley Point. These are small changes to the total dose and source specific dose shown below. The apply to relevant points of text, tables (S, 1.2, 1.3, 1.4 and 4.1) and figures (1.1, 4.1 and 6.2).

Site	Exposed	Exposure, mSv per year						
	population ^a	Total	Fish and shellfish	Other local food	External radiation from intertidal areas or the shoreline	Gaseous plume related pathways	Direct radiation from site	
<i>Total dose</i> – all sources	Adult occupants over sediment	0.013	<0.005	<0.005	0.012	<0.005	<0.005	
Source specific doses	Seafood consumers	0.018	<0.005	-	0.017	-	-	

240, Appendix 2

134, Table 4.1

Third entry on the table – Sellafield – the discharges during 2012 (Bq and % of annual limitb) columns and should have read:

Beta	1.03E+09	2.5
Antimony-125	3.20E+09	11
Caesium-137	1.59E+08	2.7

Page, Section	Comment
41, Figure 2.3	The River Ribble houseboat dose rate datum for 2012 (figure 2.3, RIFE-18) was plotted incorrectly, it is shown corrected in Figure 2.4 in RIFE-19
134, Table 2.18	Sellafield. These are small changes to the total dose shown below. They apply to relevant points of text, tables (1.2 and 2.18) and figure 2.6.

Exposed population ^a		Exposure, mSv per year								
ροριιατιοη»	Total		Seafood (nuclear industry discharg		eafood other ischarges)	Other local food	External radiation from intertidal areas, river banks or fishing gear	Intakes of sediment and water	Gaseous plume related pathways	Direct radiation from site
<i>Total dose</i> – max effect of gaseous and direct radiat	s release									
Infant root veget consumers	table	0.011	-	-		0.011	-	-	-	-
	196, 7	Table 7.7		Oil &	& Gas (0	Offshore) s	d previous to should have en corrected	been class	sified as O	il & Gas
RIFE-17 2011	52, Se	ection 2		On Figure 2.14 the year labels from 2004 to 2011 were underneath the bar chart incorrectly and should have been one place to the right, as shown in RIFE 18.						
	61, Se	ection 2		Springfields 'Source specific doses' last entry on the table shoul read: 'Consumers of locally grown food' not 'Infant consumers of locally grown food'						
	209, S	Section 9		Line 7, paragraph 7, should read: Tritium concentrations in the western English Channel were also very low (Figure 9.7).						
	240, A	Appendix	2	limit Urar Othe	ts (annua nium er Alpha nnetium-	1 equivale 7.5 2.4 99 1.0	e – Capenhu ent) ^a Bq colu 50E+06 40E+06 90E+08 25E+09			

	Page, Section	Comment
RIFE-14-17 2011	CD, Appendix 1	Table X2.2 Sellafield Q – Ravenglass nature warden assessment, the ingestion and inhalation rates of sediment have been incorrect, they should have read:
		RIFE-14 3.1 10-3 kg y- ¹ mud by inadvertant ingestion 5.6 10-5 kg y- ¹ mud by resuspension and inhalation
		RIFE-15 3.4 10-3 kg y- ¹ mud by inadvertant ingestion 6.3 10-5 kg y- ¹ mud by resuspension and inhalation
		RIFE-16 3.4 10-3 kg y- ¹ mud by inadvertant ingestion 6.3 10-5 kg y- ¹ mud by resuspension and inhalation
		RIFE-17 3.4 10-3 kg y- ¹ mud by inadvertant ingestion 6.3 10-5 kg y- ¹ mud by resuspension and inhalation
RIFE-16 2010	30, Table 1.2B	Trawsfynydd, should read Adult fish consumers 0.012 Fish, gamma dose rate over sediment, ⁹⁰ Sr, ¹³⁷ Cs, ²⁴¹ Am
	37, Section 2	Line 13, paragraph 3, second column should read The dose to wildfowlers and farmers from exposure over salt marsh was 0.032 mSv, which was less than 4 per cent of the dose limit for members of the public of 1 mSv. The small decrease in dose from 0.036 mSv (in 2009) was due to lower gamma dose rates over marsh in 2010.
	100, Section 3	The graph in Figure 3.2 is missing 2010 data. The data for 2010 is shown in Figure 3.2 RIFE 17
	122, Section 4	Line 7, paragraph 1, first column should read An increase in the fish and crustacean consumption rates has been observed, together with a decrease in the mollusc and occupancy rates, in comparison with those of the previous survey reported in 2006.
	Appendix 1, Annex 2	Table X2.2 Sellafield Group N winkle consumption should have said 15kg y ⁻¹ (not 18 kg y ⁻¹)
RIFE-15 2009	233, Table A2.1	MoD Coulport under reported discharges for the end of 2009. The ³ H discharge for 2009 should have been 3.40 E-03 TBq.
	249, Table A4.2B	Trawsfynydd, should read Adult fish consumers 0.012 Fish, gamma dose rate over sediment, ⁹⁰ Sr, ¹³⁷ Cs, ²⁴¹ Am
RIFE-14 2008	12, Figure S1	Both bars for Bradwell should be the same height. The bar for exposures due to liquid wastes is wrong.

	Page, Section	Comment									
RIFE-14 2008	33, Section 2	Springfields, doses to the public Lines 1 & 2 second column should read pathways from gaseous discharges were less than 0.005mSv which was less than 0.5 per cent									
	51, Figure 2.22	The bar for Whitehaven in 2008 should have been the same height as the bar for 2007									
	109, Section 4	Gaseous discha Line 28, first co The results of n	olumn sho	uld read		ng					
	167, Table 6.3a	Ba Results for Cardiff East WWTW should have been:									
	Material	Location or selection ^b	No. of sampling observ-	Mean ra Bq kg ⁻¹	idioactivity co	ncentratior	ı (fresh) ^a ,				
			ations ^c	Organic							
				³ H ^e	³Н	³ H ^f	14 ^c				
	Terrestrial samples Crude effluent Final effluent Sludge pellets Solids from crude effluent	Cardiff East WWTW Cardiff East WWTW Cardiff East WWTW Cardiff East WWTW	3E 3E 3E 3E	<150 <60	<220 <70 76000 <7500	82 80	<11 <11 740 <1800				
	225, Table A2.2	Sellafield (sea pread 2 10 ⁴	oipelines)	Tritium	discharge	limit sho	uld have				
	236, Table A4.2B	Trawsfynydd, s Adult fish consu		d 0.010	Fish, gar sedimen	nma dose t, ⁹⁰ Sr, ¹³⁷	e rate over Cs, ²⁴¹ Am				
RIFE-13 2007	127, Table 4.5a	The ²¹⁰ Po and ²¹⁰ Pb results are the wrong way round for South Gare winkles. ²¹⁰ Po should be 11 and ²¹⁰ Pb should be 0.46 Bqkg ⁻¹									
	153, Table 5.1	Derby, the total exposure and exposure from intakes of sediment and water should have been <0.005 mSv.									
	161, Section 6 Key points	Line 17 second column should readThe total dose of 0.008									
	236, Table A4.2B	Trawsfynydd, s Adult fish consu		d 0.014			e rate over Cs, ²⁴¹ Am				
	239, Appendix 5	Line 3 first colu indicated that				e no adv	erse impact				
RIFE-12 2006	70, Table 2.7	The concentrati been 29.	on of ²⁴¹ A	.m in wi	nkles at Di	rigg shou	lld have				

	Page, Section	Comme	ent							
	103, Section 4 Key points	1								
	187, Figure 8.5	The range in the key should have been 2 to 8.								
	234, Table A4.2B	-	ynydd, should I children of fis ers		Fish, gamma sediment, ⁹⁰ Si	dose rate over r				
Previous RIFE reports (RIFE 2–12 inclusive)		The pul in the y incorre	blished gaseou ears, 1996, 19 ctly. The revis	of Alpha and H is discharges of 98-2001 and 2 ed data is give 97 should read	of alpha and b 2005-6 were n on below, the	eta at Sellafield reported % of annual				
		Year	Alpha (Bg)	% of annual Limit	Beta (Bg)	% of annual Limit				
		1996	1.80E+08	11	3.40E+09	7.1				
		1998	8.20E+07	4.8	1.60E+09	3.3				
		1999	1.70E+08	10	2.20E+09	4.6				
		2000	9.00E+07	5.3	1.10E+09	2.3				
		2001	7.20E+07	3.7	9.70E+08	<1				
		2005	8.90E+07	10	1.70E+09	4.0				
		2006	1.10E+08	13	2.00E+09	4.8				

In May 20 release of the author RIFE-22 f	16, DSRL notified SEPA of the unmonitored krypton-85 gase (sed discharge outlet at the Di or more detail). The krypton- ed and are presented below. Revised Discharge (Bq) 1.46E+08	he identification of the cous discharges through FR facility (see table A2.
release of the author RIFE-22 f been revis Year 1995	unmonitored krypton-85 gase ised discharge outlet at the Di or more detail). The krypton- ed and are presented below. Revised Discharge (Bq)	eous discharges through FR facility (see table A2. 85 discharge data have
1995		Revised % of annual limit
	1 46F+08	
1996	1.102100	37
	1.47E+08	37
1997	1.25E+08	31
1998	1.25E+08	31
1999	1.25E+08	31
2000	1.26E+08	31
2001	1.25E+08	31
2002	5.31E+08	130
2003	3.57E+08	89
2004	8.35E+07	21
2005	2.37E+07	5.9
2006	2.37E+07	5.9
2007	2.55E+07	6.4
2008	3.04E+07	7.6
2009	3.61E+07	9.0
	5.89E+07	15
		23
2012	9.68E+07	24
2013	1.07E+09	270
Discharge aut	horisation revised 2014	
2014	2.58E+08	<1
2015	7.92E+08	<1
	1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 Discharge aut 2014 2015	19991.25E+0820001.26E+0820011.25E+0820025.31E+0820033.57E+0820048.35E+0720052.37E+0720062.37E+0720072.55E+0720083.04E+0720105.89E+0720119.29E+0720129.68E+0720131.07E+09Discharge authorisation revised 201420142.58E+0820157.92E+08

	225, Table 9.15		Comment								
			Incorrct hea below:	dings in	the to	p part of	the tab	le. Shou	ld have be	en as	
T	able 9.15.	Concentrati 2005	ons of radio	nuclides in sour	ces of dr	inking v	vater in E	ngland a	ind Wales	,	
Ĺ	ocation	Sample sou	rce		No. of sampling	Mean ra	adioactivity	concentrati	on, Bq l ⁻¹		
					observ- ations	³ H	⁴⁰ K	⁹⁰ Sr	¹³⁷ Cs	²¹⁰ Po	
G N	Vales Wynedd Iid-Glamorgar owys			t Works	4 4 4	<4.0 <4.0 <4.0	<0.020 <0.045 <0.050	0.0036 0.0030 0.0040	0.0018 <0.0010 0.00090	<0.010 <0.013 <0.010	
	248, Table A1.2		Sellafield discharge limits for alpha and beta should have been 8.90 10 ⁻⁵ and 0.00174 TBq respectively.								
		251, Table A	1.2	Aldermastor 14.1 and 8.3			narge and	d % lim	it should	l have bee	'n
RIFE 8 2002-2		Concentration sediments	ons in	For sedimer discovered i outside the i a correction to the affect reported her	in 2007 instrume factor h ed data	that the ent cali as bee from 2	e resultin bration n n calcula	ng samp range. F ated and	ole bulk Followin d this ha	densities v g investigs s been app	were ations
				T1	1	1	.::c	41 C	ю (

These amendments do not significantly affect any assessments, charts or statements in the relevant RIFE reports.

Comment

Table E2. Amended concentrations of radionuclides in sediment, 2002 2005

Year	Site	Location	No. of sampling	Mean	adioact	ivity co	oncentratio	on (dry), B	q kg-1		
			observ- ations	57Co	⁶⁰ Co	_	$\frac{65}{2n}$	$\frac{95}{2r}$	95Nb	¹⁰⁶ Ru	¹²⁵ Sb
2002	Aldermaston	Reading (Kennet) Stream draining south	4 4								
	Bradwell	Maldon Waterside	2 2		<3.4 <4.0						
	Capenhurst Cardiff	Rossmore (4.3 km downstream) Canal West of pipeline	2 2 2								
	Devonport	Lopwell	2 2		<3.7						
	Dungeness	Pilot Sands	2		< 0.9						
	Harwell	Appleford Day's Lock	4 4		<0.6 <0.5						
	Sellafield	Caerhun	2		<3.3			<9.6	<7.7	<23	<9.2
2003	Aldermaston	Reading (Kennet) Aldermaston	4 4								
	Amersham Bradwell	Outfall (Grand Union Canal) Waterside	3 2	< 0.30	<1.1 <2.0		<1.5				
	Cardiff Derby	Canal River Derwent (downstream)	1 4		<1.0						
	Devonport	Lopwell	2		<2.5						
2004	Aldermaston	Reading (Kennet) Aldermaston	4								
	Amersham	Stream draining south Upstream of outfall (Grand Union Canal) 2	4	<6.4	<1.8		<4.1				
	Cardiff	Canal	2	-0.4	-1.0		~7.1				
	Sellafield	Caerhun	2		<1.6			<4.5	<2.2	<12	<13
2005	Aldermaston Amersham	Reading (Kennet) Upstream of outfall (Grand Union Canal) 2	4	<5.3	<1.6		<3.6				
	Cardiff Canal Harwell Lydebank Brook	2 4		<1.7							
	1 lai weli	Appleford	4		<2.5						
	Sellafield Trawsfynydd	Caerhun Bailey Bridge	2 2		<2.6 <8.3			<8.8	<6.8	<20	<20 <44
Year	Site	Location	No. of sampling	Mean	radioact	ivity co	y concentration (dry), Bq kg ⁻¹				
			observ- ations	125I	¹³¹ I	<u>134Cs</u>	<u>137Cs</u>	<u>144Ce</u>	¹⁵⁴ Eu	¹⁵⁵ Eu	²⁴¹ An
2002	Aldermaston	Reading (Kennet) Stream draining south	4 4				7.3 <5.1				<1.9 <1.2
	Bradwell	Maldon Waterside	2 2			6.5 3.9	80 59				<4.0 <13
	Capenhurst	Rossmore (4.3 km downstream)	$\frac{2}{2}$			3.9	<i></i>				~15
	Cardiff	Canal	2	< 0.80			2.4				
	Devonport	West of pipeline Lopwell	2 2 2	<3.1			33 7.7				
	Dungeness	Pilot Sands	2				<0.90				<1.6
	Harwell	Appleford	4				<13				
	Sellafield	Day's Lock Caerhun	4 2			<3.4	6.0 430	<25	<7.3	<8.0	75
2003	Aldermaston	Reading (Kennet) Aldermaston	4 4				8.0 6.3				<1.6 <2.7
	Amersham	Outfall (Grand Union Canal)	3	<1.0	<550		<2.1				
	Bradwell	Waterside	2	<14			35				<2.7
	Cardiff Derby	Canal River Derwent (downstream)	1 4	<1.4			16				
	Devonport	Lopwell	2				<10				
	Devolipoit	Lophen									

	Derby	River Derwent (downstream)	4								
	Devonport	Lopwell	2				<10				
2004	Aldermaston	Reading (Kennet)	4				5.4				<1.1
		Aldermaston	4				<3.9				<1.3
		Stream draining south	4				<2.8				1.6
	Amersham	Upstream of outfall (Grand Union Canal)	2	< 0.80	<1.4		10				
	Cardiff	Canal	2	<1.5			11				
	Sellafield	Caerhun	2			<1.5	220	<5.7	<7.3	<3.1	51
2005	Aldermaston	Reading (Kennet)	4				<3.9				6.5
	Amersham	Upstream of outfall (Grand Union Canal)	2	<1.0	<9.1		6.2				
	Cardiff	Canal	2	<1.8			9.1				
	Harwell	Lydebank Brook	4				9.0				
		Appleford	4				<11				
	Sellafield	Caerhun	2			<2.5	230	<9.3	<12	<5.3	59
	Trawsfynydd	Bailey Bridge	2			<4.2	920				76

	Page, Section	Comment
RIFE-10 2004	75, Table 3.7	The entry for Haverigg should read 0.087.
	45, Figure 3.8	The americium-241 discharge data for 2004 was plotted incorrectly, it is shown corrected in Figure 3.12 in RIFE-11.
	87, Table 3.15 151 Table 6.1(a) 154, Table 6.3(a) 166 Table 7.3(a) 173, Table 8.1(a)	The following activity in soil data were reported as being Bq kg ⁻¹ (dry) whilst they should have been reported as Bq kg ⁻¹ (wet). All data are averages unless stated.

Site/location	⁶⁰ Co	¹⁰⁶ Ru	¹²⁵ Sb	¹³⁴ Cs	¹³⁷ Cs	²³⁴ U	²³⁵ U	²³⁸ U
Sellafield (Table 3.15)	<0.43	<1.4	<0.73		-			
max	0.80	<1.5	< 0.80			16	0.64	15
Aldermaston (Table 6.1(a))								
max						7.8	0.29	7.2
Derby (Table 6.3(a))								
max						27	0.94	23
Cardiff (Table 7.3(a))				<0.47	7.1			
max				<0.50	7.7			
Drigg (Table 8.1)								
max						11	0.42	11

223, Table A1.1 The % annual limit for ¹⁰⁶Ru discharge at Sellafield was 7% (not 70%).

246, Table A5.1

Some dose per unit intake values were missing for 1 yr old. These were:

Table A5.1. Dosimetric data					
Radionuclide	Dose per unit intake by inhalation using ICRP-60 methodology (Sv Bq ⁻¹)				
Sr-90 [†]	1.2E-07				
Zr-95 [†]	2.1E-08				
Ba-140 [†]	2.6E-08				
Pb-210 [†]	4.0E-06				
Th-228 [†]	1.4E-04				
U-238	9.4E-06				

+ Energy and dose per unit intake data include the effects of radiations of short-

lived daughter products

Page, Section	
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Comment

RIFE-9	82, Table 3.15
2003	138 Table 6.1(a)
	141, Table 6.3(a)
	151, Table 7.3(a)
	157, Table 8.1(a)

The following activity in soil data were reported as being Bq kg^{-1} (dry) whilst they should have been reported as Bq kg^{-1} (wet). All data are averages unless stated.

Site/location	⁶⁰ Co	¹⁰⁶ Ru	¹²⁵ Sb	¹³⁴ Cs	¹³⁷ Cs	¹⁵⁴ Eu	²³⁴ U	²³⁵ U	²³⁸ U	²⁴¹ Am
Sellafield (Table 3.15)	< 0.90	<3.3	<1.2	< 0.40	75	< 0.50				5.9
max	1.6	<4.2	<1.6		89	< 0.60	11	0.54	10	7.7
Aldermaston (Table 6.1(a))										
max							11	0.48	11	
Derby (Table 6.3(a))										
max							47	1.6	40	
Cardiff (Table 7.3(a))				< 0.40	8.8					
max					11					
Drigg (Table 8.1)										
max							6.7	0.26	6.7	

185, Table 9.12

Table 9.12. Concentrations of radionuclides in rainwater and air 2003

Some data were incorrect. The amended version of the table is attached.

Location	Sample	No. of sampling	Mean	radioactivit	y concentratio	n ^a in rainwater an	d air				
		observ- ations	³ H ⁷	Be	⁹⁰ Sr ^b	¹³⁷ Cs	²¹⁰ Pb	²¹⁰ Po	²²⁸ Th	Gross alpha ^b	Gross beta ^b
Ceredigion											
Aberporth	Rainwater	12	<2.4	<1.6		< 0.053	0.10		*		
	Air	4		0.0022		< 0.00000052	0.00017		*		
Co. Down											
Conlig	Rainwater	4		<1.5		< 0.022	*		*		
	Air	4		0.0022		< 0.0000063	0.00015		*		
Dumfries and Gal	loway										
	Eskdalemuir	Rainwater	4	<2.7	1.2		< 0.0098	0.094		*	
	Air	4		0.0018		< 0.0000043	0.00013		*		
North Yorkshire											
Dishforth	Rainwater	4		<2.2		< 0.039	*		*		
	Air	4		0.0016		< 0.0000055	0.00014		*		
Oxfordshire											
Chilton	Rainwater	12		<1.5	< 0.00064	< 0.032	0.32		*	0.074	0.17
	Air	13		0.0018		< 0.0000034	0.00027	< 0.000014	*		
Shetland											
Lerwick	Rainwater	4		1.6		< 0.017	*		*		
	Air	4		0.0015		< 0.00000052	0.00010		*		
Suffolk											
Orfordness	Rainwater	4	<2.2	<2.4		< 0.048	*		5.2		
	Air	4		0.0022		< 0.00000053	0.00020		*		

* Not detected by the method used

 $^{a}~$ Bq $l^{\mbox{--}1}$ for rainwater and Bq kg $^{\mbox{--}1}$ for air

^b Annual bulk analysis

187, Table 9.14

The concentration of ²¹⁰Po in Cornwall, River Fowey was <0.0098 Bq l⁻¹.

Comment

188, Table 9.16

A revised version is attached.

Table 9.16. Estimates of maximum radiation exposure from radionuclides in drinking water, 2003^a

Country	Exposure, mSv Man-made radionuclides ^b	Natural radionculides ^e	All radionuclides
England	<0.001	0.028	0.028
Northern Ireland	<0.001	0.026	0.026
Scotland Wales	<0.001 <0.001	0.027	0.027

a The maximum dose is selected for each nuclide group from data for individual sampling locations. Many estimates of dose are based on concentration results at limits of detection.

b Including tritium

c Including carbon-14 ^d Analysis of natural radionuclides was not undertaken

214, Table A1.2 The data shown for Faslane are a duplication of the data for Rosyth and were included in error.

Flounder

Flounder

RIFE-8 2002	59, Table 4.1	Two tritiu	Two tritium results were omitted. The data are attached.							
		Table 4.1.	Beta/gamma radioactivity in fish from the Irish Sea vicinity and further afield, 2002							
		Location	Material	No.of sampling observ- ations	³ H					

Liverpool Bay

Mersey estuary

79, Table 4.14 82 Table 4.17 128, Table 7.1(a) 138, Table 8.2(a) The following activity in soil data were reported as being Bq kg⁻¹ (dry) whilst they should have been reported as Bq kg⁻¹ (wet). All data are averages unless stated.

2 2

<25 <25

Site/location	⁶⁰ Co	¹⁰⁶ Ru	¹²⁵ Sb	¹³⁴ Cs	¹³⁷ Cs	²³⁴ U	²³⁵ U	²³⁸ U
Sellafield (Table 4.14)	< 0.80	<2.3	<1.2	68				_
max	1.0	<2.7	<1.4	82				
Drigg (Table 4.17)								
max						6.9	0.30	6.5
Aldermaston (Table 7.1(a))								
max						8.7	0.35	8.3
Cardiff (Table 8.2(a))				< 0.30	6.4			
max					8.1			

102, Figure 6.1

The concentration of caesium-137 in Bradwell sediments was plotted incorrectly in Figure 6.1, it is shown corrected in Figure 5.1 of RIFE-9.

	Page, Section	Comment					
RIFE-1-8 1995-2002			enco Capenhurst have reassessed atmospheric discharges of nium; the reassessed discharges are listed in Table E1.				
			ssessed atmospheric discharges of uranium m Urenco Capenhurst				
		Year	Original reported discharge TBq	Reassessed discharge TBq			
		1993	1.74 10-9	2.41 10-7			
		1994	6.74 10-9	2.63 10-7			
		1995	2.69 10-8	2.75 10-7			
		1996	1.11 10-7	8.23 10-7			
		1997	6.80 10-8	4.90 10-7			
		1998	6.87 10-8	1.87 10-6			
		1999	8.15 10-8	1.01 10-6			
		2000	9.64 10-8	8.72 10-7			
		2001	1.20 10-7	9.77 10-7			
		2002	1.16 10-7	6.01 10-7			

RIFE-7 71, Table 4.8 80, Table 4.15(a) 2001 93, Table 5.2(a) 122, Table 7.3 127, Table 8.2(a) 130, Table 9.1

The following activity in soil data were reported as being Bq kg⁻¹ (dry) whilst they should have been reported as Bq kg⁻¹ (wet). All data are averages unless stated.

Site/location	⁶⁰ Co	¹⁰⁶ Ru	¹²⁵ Sb	¹³⁴ Cs	¹³⁷ Cs	²³⁴ U	²³⁵ U	²³⁸ U	²⁴¹ Am
Sellafield (Table 4.8)	< 0.80	<3.1	<1.1		80				5.8
max	1.2				97	9.3	0.34	9.1	6.0
Springfields (Table 4.15(a))									
max						95	4.6	89	
Harwell (Table 5.2(a))	< 0.40			< 0.40	2.9				
Featherstone position A (Table 7.3)						9.5	0.41	9.0	
Featherstone position B (Table 7.3)						7.3	0.34	7.5	
Cardiff (Table 8.2(a))				< 0.33	5.6				
max				< 0.40	6.5				
Derby (Table 9.1)						18	0.80	18	
max						30	1.3	29	

176, Table A1.1 Discharges of Alpha for Hunterston 'A' given as 0.14 TBq should have been 1.4 10⁻⁵ TBq. The % of limit given as 350 should have been < 1. 181, Table A1.2 Dungeness 'A' discharge limit and % of limit for tritium should have been 3 and 23 respectively. 31, Section 3.5 It was stated that the dose limits do not apply to natural RIFE-6 radionuclides. This sentence should be deleted

2000

	Page, Section	Comment					
	75, Table 4.16 124, Table 9.1	The following activity (dry) whilst they shou data are averages unle	ld have beer				
		Site/location	²³⁴ U	²³⁵ U	²³⁸ U		
		Capenhurst (Table 4.16) max Derby (Table 9.1) max	8.5 24	0.35 0.96	8.4 23		
	155, Table 12.1	Target date for project 'Tritium and carbon-14 in seafood' shou have been March 2003.					
	166, Table A1.1	Discharges of tritium from Devonport (pipeline) given as TBq should have been 0.087 TBq.					
	168, Table A1.2	Sellafield Discharge limits of alpha and beta activity should hav 0.00196 and 0.328 TBq. Percentage of limit for alpha activity should have been 4.0 and <1. Discharges of tritium and 14C from Sellafield given a 2.58 TBq should have been 355 and 2.94 TBq. Relevant percentages given as 15 and 30 should have and 34.					
RIFE-5 1999	71, Table 4.15(a) 73, Table 4.16 118, Table 9.1	The following activity (dry) whilst they shou data are averages unle	ld have beer	· ·			
		Site/location	²³⁴ U	²³⁵ U	²³⁸ U		
		Springfields (Table 4.15(a)) ma Capenhurst (Table 4.16) max Derby (Table 9.1) max	x 180 12 34	15 0.46 1.3	200 12 31		
	112, Section 8.2	The second sentence of tide washed pasture pa mSv y ⁻¹ respectively." read 0.042 mSv y ⁻¹ . T	athways gav The dose d	ve doses of 0.0 ue to the duck	032 and 0.009 c pathway should		
	123, Table 10.2	The concentration of ¹ 960 Bq kg ⁻¹ (wet).	⁴ C in grass	from Billingh	am was		
	162, Table A1.2	The Dounreay (Fast R	eactor) data	a were duplica	nted.		
RIFE-4 1998	70, Table 4.12	The concentrations of were 0.61 and <1.8 Bo is available.					

	Page, Section	Comment						
	75, Table 4.15(a) 77, Table 4.16 116, Table 9.1	The following activi (dry) whilst they sho data are averages un	ould have been					
		Site/location	²³⁴ U	²³⁵ U	²³⁸ U			
		Springfields (Table 4.15(a)) Capenhurst (Table 4.16) Derby (Table 9.1)	72 7.9 31	3.0 0.30 0.93	68 7.4 26			
	96, Table 6.4(a)	The concentration of 241 Am in mud at Paddy's Hole was <1.0 Bq kg ⁻¹ (dry). No measurement of $^{239/240}$ Pu was made.						
	125, Section 11.1	Last but one paragraph. The estimated dose was 0.094 mS						
	131, Section 11.8	Last paragraph, first	sentence. Rej	place 1997 wi	ith 1998.			
RIFE-3 1997	19, Table 1.1	Replace beta, tritium with 1.97 10 ⁻⁶ , 2.22 Replace alpha and b 4.44 10 ⁻³ TBq and <	10 ⁻⁶ , 5.60 10 ⁻⁷ eta limit and j	TBq respection TBq respection TBq respective to the test of test o	vely.			
	21, Table 1.2	Replace tritium Win	frith limit wit	h 5 TBq.				
	38, Section 3.6.5	First paragraph. Reference to factor of 0.85 millisievert per milligray should be ICRP (1996b).						
	70, Table 4.10 72, Table 4.12 81, Table 4.16							
	72, Table 4.12 81, Table 4.16	The following activi (dry) whilst they sho data are averages un	ould have been					
	72, Table 4.12	(dry) whilst they sho	ould have been					
	72, Table 4.12 81, Table 4.16	(dry) whilst they sho data are averages un	buld have been less stated.	n reported as	Bq kg ⁻¹ (wet). A			
	72, Table 4.12 81, Table 4.16	(dry) whilst they sho data are averages un Site/location Drigg (Table 4.10) Ravenglass (Table 4.12) Springfields (Table 4.12) Capenhurst (Table 4.16)	224U 9.9 18 31 9.5 27	n reported as	Bq kg ⁻¹ (wet). A			
	72, Table 4.12 81, Table 4.16 121, Table 9.1	(dry) whilst they sho data are averages un Site/location Drigg (Table 4.10) Ravenglass (Table 4.12) Springfields (Table 4.12) Capenhurst (Table 4.16) Derby (Table 9.1) The maximum dose	due to gaseou	n reported as ²³⁵ U 0.37 0.60 1.5 0.40 0.97 us disposals w	Bq kg ⁻¹ (wet). A			

Page, Section	Comment			
58, Table 2	Replace ³⁵ S Oldbury ⁴¹ Ar Trawsfynydd lin		*	A A
95 T-11-1(,	1 1 [.] D
85, Table 16 87, Table 18 91, Table 20(a)	The following activit (dry) whilst they show data are averages unle	uld have bee		0 1
87, Table 18	(dry) whilst they show	uld have bee		0 1
87, Table 18 91, Table 20(a) 95, Table 21	(dry) whilst they show data are averages und Site/location	uld have bee ess stated.	n reported as I	²³⁸ U
87, Table 18 91, Table 20(a) 95, Table 21	(dry) whilst they show data are averages unly Site/location Drigg (Table 16)	$\frac{1}{2^{24}U}$	n reported as I $\frac{^{235}U}{0.28}$	²³⁸ U 7.4
87, Table 18 91, Table 20(a) 95, Table 21	(dry) whilst they show data are averages unly Site/location Drigg (Table 16) Ravenglass (Table 18)	uld have bee ess stated.	n reported as I	²³⁸ U
87, Table 18 91, Table 20(a) 95, Table 21	(dry) whilst they show data are averages unly Site/location Drigg (Table 16)	$\frac{1}{2^{24}U}$ $\frac{2^{24}U}{8.3}$ 16	n reported as I $\frac{^{235}U}{0.28}$ 0.56	²³⁸ U 7.4 15

Table 47

This was omitted in error. The data are attached.

Sampling location	Material	No of samples	Mean radioactivity concentration (dry)*, Bq kg ⁻¹							
	1		³ H	¹⁴ C	⁹⁰ Sr	¹²⁵ I	¹³⁴ Cs	¹³⁷ Cs	²³⁸ Pu	239+240 Pu
Beddingham Lewes, East Sussex	Grass	4	<40 ±18	130 ±28	1.8 ±0.1	<0.19	<0.61	<0.54 ±0.30	<0.00099 ±0.00037	0.0067 ±0.0012
Cilgwyn Quarry, Gwynedd	"	4	<30	360 ±55	3.0 ±0.2	<063	<0.69	<5.2 ±0.9	<0.0095	0.018 ±0.005
Lyndown, Devon	**	4	<28	150 ± <i>30</i>	2.4 ±0.2	<1.3 ±0.2	<0.60	<0.62 ±0.17	<0.0010	<0.0024 ±0.0009
Witton, Cheshire	"	4	<38	130 ± <i>33</i>	0.76 ±0.12	<1.1 ±0.3	<0.59	<0.63	<0.0013	0.0021 ±0.0016

* Results are available for other artificial nuclides detectable by gamma spectrometry All such results are less than the limit of detection

RIFE-1 1995	38, Section 16.2	Last but one sentence, replace 1994 with 1995.						
	39, Section 16.4	First sentence, 2nd p	aragraph, replac	e 1994 with	1995.			
	45, Table 1	Replace ²⁴¹ Am Sellafield (sea pipelines) limit of 1.3 TBq with 0.3 TBq. Replace ⁶⁰ Co Harwell (pipeline) percentage of 1.5 with 6.9.						
	74, Table 16 99, Table 33(a)	The following activi (dry) whilst they sho data are averages un	ould have been r	*	• • •			
		Site/location	²¹⁰ Po	²³⁸ Pu	239+240 Pu			
		Sellafield (Table 16) Aldermaston (Table 33(a))	64	0.0091	0.36			
		max		0.016	0.56			
	99, Table 33(a)	The concentration of 12±0.15 Bq kg ⁻¹ (dry	-	Outfall (Pang	gbourne) was			

Р	Page, Section	Comment
1		The average consumption rates of nuts and offal by 10 year old children were 1.5 kg y ⁻¹ . The consumption of whelks at Sellafield by group E (Whitehaven commercial) was 11 kg y ⁻¹ .
1	38, Appendix 6	The values of t_f and t_s were 0. The transfer factors for beef offal (²⁴¹ Pu) and lamb (²⁴¹ Pu) were 2 10 ⁻² and 4 10 ⁻⁴ respectively.