

## **RADIOACTIVITY IN FOOD AND THE ENVIRONMENT (RIFE) 2008:**

### **Summary of Monitoring Results for Berkeley & Oldbury**

#### ***INTRODUCTION***

The Food Standards Agency has responsibility for food safety throughout the UK. The Agency has an extensive monitoring programme to measure radioactivity in food and this programme is independent of the monitoring undertaken by the nuclear industry. The programme has been running since 1963 and its purpose is to ensure that any radioactivity in food does not affect food safety and that doses to consumers are below national and international limits.

The Environment Agency (EA) seeks to secure continuous improvement in the protection of the public and the environment from the disposal of radioactive wastes. In support of its regulation under the Radioactive Substances Act 1993, the EA commissions independent monitoring of radioactive waste discharges and assesses their impact on the environment.

The annual Radioactivity in Food and the Environment (RIFE) report contains a comprehensive set of results from the monitoring of food and the environment throughout the UK. The report is a collaboration between the Food Standards Agency and all three UK Environment Agencies (the Environment Agency, the Scottish Environment Protection Agency and the Northern Ireland Environment Agency).

The aim of Food Standards Agency's programme is to monitor all foods produced in the vicinity of the main nuclear sites, e.g. milk, crops, fish and seafood. Where food is not available indicator materials such as seaweed or grass are sampled. Samples are analysed for a wide range of radionuclides including all that are known to be discharged from the nuclear site. Doses are estimated, based on consumers eating above-average amounts of locally produced food and/or their exposure to environmental radioactivity.

#### ***SAMPLES AND RESULTS***

During 2008, 8 terrestrial and 7 aquatic samples of food (excluding milk) were collected from the vicinity of the Berkeley and Oldbury sites as part of the Food Standards Agency's programme. Milk was collected weekly from 8 local farms and then bulked together on a quarterly basis prior to analysis. In addition, the Environment Agency collected a number of environmental samples.

The results obtained are shown in table 1.

### ***DOSE ASSESSMENT***

In general, the doses are estimated for the 'critical group', that is those people who are likely to receive the greatest dose as a result of their age, diet or way of life. The dose estimates exclude natural background radiation.

In 2008, the critical group around the Berkeley and Oldbury sites was the local fishing community, consuming locally caught fish and shell fish. The dose to this group was 29 microsieverts ( $\mu\text{Sv}$ ). The non-fishing community, consuming above-average amounts of locally grown food and milk, received a dose of less than 5 microsieverts ( $\mu\text{Sv}$ ).

These doses are comparable to those of previous years and are well within the annual dose limit of 1000  $\mu\text{Sv}$  for members of the public from man-made radioactivity. The doses can also be compared with the average natural background dose in the UK of 2230  $\mu\text{Sv}/\text{year}$ ; although in some parts of Cornwall the natural background dose is 7000  $\mu\text{Sv}/\text{year}$ .

The total alpha and total beta activity concentrations in freshwaters were below the World Health Organisation (WHO) screening levels. Previous work by the EA has shown that the drinking water pathway is insignificant in terms of public radiation exposure.

### ***FURTHER INFORMATION***

Details of the methods, analysis and dose assessments, including all the data are available in the Radioactivity in Food and the Environment report 2008 (RIFE 14). Printed copies of the report may be requested free of charge from:

Selwyn Runacres  
Food Safety: Contaminants Division  
Food Standards Agency  
Room 4B  
Aviation House  
125 Kingsway  
London, WC2B 6NH

or by e-mail: [radiological.surveillance@foodstandards.gsi.gov.uk](mailto:radiological.surveillance@foodstandards.gsi.gov.uk)

Alternatively, electronic copies of the RIFE report can be downloaded from our website, where you can also find provisional results for 2009, which are updated quarterly. Our website address is: [www.food.gov.uk/science/surveillance/radiosurv/](http://www.food.gov.uk/science/surveillance/radiosurv/)

**Table 1. Concentrations of radionuclides in food near Berkeley and Oldbury nuclear power stations, 2008**

Material	Location	No. of sampling observations	Mean radioactivity concentration (fresh) <sup>a</sup> , Bq kg <sup>-1</sup>								
			<sup>3</sup> H	<sup>14</sup> C	<sup>99</sup> Tc	<sup>134</sup> Cs	<sup>137</sup> Cs	<sup>238</sup> Pu	<sup>239</sup> Pu+ <sup>240</sup> Pu	<sup>241</sup> Am	<sup>242</sup> Cm
<b>Marine samples</b>											
Salmon	Beachley	2	<25			<0.08	<0.13			<0.07	
Bass	River Severn	2	260			0.12	2.4			<0.20	
Elvers	River Severn	1	<25			<0.12	<0.10			<0.23	
Shrimps	Guscar	2	260	38		<0.06	0.44	0.00040	0.0023	0.0022	* * *
Material	Location or selection <sup>b</sup>	No. of sampling observations <sup>c</sup>	Mean radioactivity concentration (fresh) <sup>a</sup> , Bq kg <sup>-1</sup>								
			<sup>3</sup> H	<sup>14</sup> C	<sup>35</sup> S	<sup>134</sup> Cs	<sup>137</sup> Cs				
<b>Terrestrial samples</b>											
Milk		8	<4.5	17	<0.37	<0.20	<0.20				
Milk	max		<5.0	20	<0.50						
Apples		1	<5.0	7.0	<0.20	<0.20	<0.20				
Blackberries		1	<5.0	17	<0.20	<0.20	<0.30				
Cabbage		1	<5.0	5.0	0.40	<0.20	<0.20				
Honey		1	<7.0	78	0.40	<0.20	<0.20				
Onions		1	<5.0	6.0	0.40	<0.20	<0.20				
Potatoes		1	<6.0	18	0.50	<0.20	<0.30				
Runner beans		1	<5.0	12	0.40	<0.20	<0.20				
Wheat		1	<8.0	71	0.80	<0.30	<0.20				

\* Not detected by the method used.

<sup>a</sup> Except for milk and water where units are Bq l<sup>-1</sup>, and for sediment where dry concentrations apply

<sup>b</sup> Data are arithmetic means unless stated as 'max' in this column. 'Max' data are selected to be maxima.

If no 'max' value is given the mean value is the most appropriate for dose assessments

<sup>c</sup> The number of farms from which milk is sampled. The number of analyses is greater than this and depends on the bulking regime