

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD WELSH OFFICE

Radionuclide Levels in Food, Animals and Agricultural Products

Post Chernobyl Monitoring in England and Wales

LONDON

HER MAJESTY'S STATIONERY OFFICE
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Radionuclide Levels in Food, Animals and Agricultural Products

Post Chernobyl Monitoring in England and Wales

LONDON
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Monitoring of Radioactivity in England and Wales Following the Accident at Chernobyl

INTRODUCTION

Summary

Since 1 January 1986, the Ministry of Agriculture, Fisheries and Food, in conjunction with the Welsh Office, has been undertaking routine monitoring for radioactivity in food and agricultural materials around each of the major nuclear sites in England and Wales. The existence of a nationwide sample procurement and analytical capability for foodstuffs proved to be a factor of major importance in enabling the Departments to respond quickly and comprehensively to the potential threat posed to the UK by the Chernobyl accident. A separate report on the effects of this accident on the marine environment has already been published by the Ministry's Directorate of Fisheries Research (Reference 1) and the Government has published a preliminary compilation of raw monitoring data available from a number of sources up to 23 May 1986 (Reference 2). The present compilation updates the results of the Department's main food monitoring programme up to the beginning of December 1986 for the assistance of researchers and others who have asked to have access to the complete data set in a manageable format.

Immediately it was learned that a serious nuclear accident had occured in the Soviet Union the Ministry of Agriculture began daily testing of milk from southern England. This was extended to a countrywide programme of monitoring food and agricultural produce in England and Wales once radioactivity had been detected in the UK. Initial efforts were aimed at identifying which areas of the country and types of produce were most at risk. Subsequently, when the pattern of deposition had become evident, efforts were concentrated in those regions where the highest levels of deposition had been found and on those foodstuffs most affected. Thus the data are not representative for the country as a whole but in many cases relate to "worst case" situations.

Measurements were for the most part made in the Ministry's laboratories using high resolution gamma-ray spectrometry and yielded results for individual radionuclides. Results are expressed in units of Bq/kg fresh weight or, for milk, Bq/l and are presented in Section A. Limited radiochemical determinations for pure alpha and beta emitters were undertaken in order to demonstrate that these radionuclides were not present in radiologically significant quantities.

The levels of activity found in samples were not sufficient to warrant any intervention by the Ministry of Agriculture, Fisheries and Food until in mid-June it became apparent that caesium levels in sheep for market would exceed the action level of 1000Bq/kg. Measures were then taken to ensure that no sheepmeat with caesium activity greater than this level was allowed to enter the human food chain. Monitoring effort in the areas subject to restrictions on movement and slaughter of sheep was intensified and the resulting data are presented in Section B.

The sampling effort was initially devoted to milk because of both its sensitivity to atmospherically deposited radionuclides, particularly those known to have been released during the accident, and because it is the material most likely to be the target for early intervention measures if there was substantial deposit of activity. The nature of the transfer of activity of the principal radioactive species present (iodine 131 and caesium 137 and 134) is such that peak activities are

reached within the first week after the deposition and it was quickly apparent that because of the rapid initiation of monitoring, the peak activity in milk had been detected. This was very much below the level at which any intervention would be considered. The sampling effort was further increased to obtain the widest geographical coverage of milk samples and to include milk and dairy products from animals other than cows and to monitor the quality of other agricultural products available at the time. Samples were taken of all crops produced in England and Wales as they became available for harvest, along with representative samples of the various animal types reared. The results from the analyses of these samples are shown in Section A. This is a compendium of data which have been previously released by the Departments in a series of press notices between 30 may and 16 December.

The monitoring of sheepmeat samples began in mid-May and by mid-June it became clear that it would not be possible to guarantee that levels would be below the action level by the time the sheep were likely to be sent to market. The Government therefore introduced a ban on the movement and slaughter of sheep in parts of Cumbria and North Wales. Extensive monitoring of sheep within these areas followed and areas were released from restrictions only when total caesium activity in sheep fell below 1000 becquerels per kilogram of muscle. The data for sheep sampled from the restricted areas are shown in Section B. Further sampling of animals to determine the adequacy of the extent of restrictions took place during the summer and these results are amongst those in Section A.

Results

The data in this compilation are from analyses performed by a variety of laboratories. The great majority of analyses reported in Section A and all the English sheepmeat results in Section B have been undertaken by the MAFF Central Veterinary Laboratory in Surrey using high resolution gamma-ray spectrometry; the Welsh sheepmeat data in Section B are from analyses performed by several laboratories in the Principality. An overriding consideration in the work of the laboratory was to maintain a high throughout of samples. As this requirement conflicts with the long counting times needed to quantify the generally low levels of activity present, many results are quoted as "less than" a particular figure. It should be noted that this limit of determination is very much lower than the level of activity which would require any intervention and there is no question of significant results being obscured. In the latter stages of monitoring and in the measurements still being undertaken it has been possible to reduce this detection limit but the great majority of samples contain too little activity to quantify.

References

- 1. Camplin, W C. Mitchell N T. Leonard D R P. Jefferies D F. Radioactivity in surface and coastal waters of the British Isles. Monitoring of fallout from the Chernobyl reactor accident. Ministry of Agriculture, Fisheries and Food: Directorate of Fisheries Research. Aquatic Environment Monitoring Report, Number 15. (1986)
- 2. UK Government Departments. Levels of radioactivity in the UK from the accident at Chernobyl USSR, on 26 April 1986. A compilation of the results of environmental measurements in the UK. HMSO London (1986). A separate compilation "Chernobyl Accident Data for Wales" was also published by the Welsh Office.

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NOTES < = "less than" 0 = "not detected"	Units = Bq/Bq/k	l liquids

No .	Туре		County	Sample Date	Ι	131	Cs	137	Cs	134	Tot	Cs	Comments
•												-	
317	MILK	COM	AUDN	04-05-86		69						0	
318	MILK	COW	AUDN	05-05-86		91		0				0	
97	MILK	COW	AVON	05-05-86		14						0	
91	MILK	COM	AVON	05-05-86		29						0	
319	MILK	COW	AUDN	06-05-86		27						0	
92	MILK	COM	AVON	06-05-86		15						0	
320	MILK	COM	AUDN	07-05-86		22						0	
93	MILK	CDM	AVON	07-05-86		15						0	
344	MILK	COM	AVON	13-05-86	<	3						0	
867	MILK	COM	AUDN	14-05-86		15						0	
171	MILK	CDM	BEDS	04-05-86		37						0	
172	MILK	CDM	BEDS	05-05-86		32				4		4	
173	MILK	COM	BEDS	07-05-86		23		2				2	
641	MILK	CDM	BEDS	11-05-86		16		3				3	
760	MILK	CDM	BEDS	13-05-86		11		3		1		4	
	MILK		BEDS	14-05-86		8		2		1		3	
	MILK		BERKS	05-05-86	<	12						0	
	MILK		BERKS	06-05-86	<	33						0	
	MILK		BERKS	07-05-86	<	51						0	
	MILK		BERKS	08-05-86	<	40						0	
	MILK		BERKS	09-05-86	<	24						0	
	MILK		BERKS	10-05-86	<	21						0	
	MILK		BERKS	13-05-86	<	12						0	
	MILK		BERKS	16-05-86	<	6						0	
	MILK		BERKS	21-05-86	<	4						0	
	MILK		CAMBS	05-05-86		81		10	<	8	<	18	
	MILK		CAMBS	06-05-86		15		2	<	2	<	4	
	MILK		CAMBS	07-05-86		64		12		6		18	
	MILK		CAMBS	07-05-86		10		2		1		3	
	MILK		CAMBS	08-05-86		12		3		1		4	
	MILK		CAMBS	08-05-86		42		10		4		14	
	MILK		CAMBS	09-05-86		44		9		5		14	
	MILK		CAMBS	09-05-86		14		3		1		4	
	MILK		CAMBS	10-05-86		33		8		4		12	
	MILK		CAMBS	10-05-86		15		3		1		4	
	MILK		CAMBS	11-05-86		26		7		7		14	
	MILK		CAMBS	11-05-86		11		2				2	
	MILK		CAMBS	13-05-86		9	<	4			<	4	
	MILK		CAMBS	13-05-86		8		2		1		3	
	MILK		CAMBS	14-05-86		12		7		3		10	
	MILK		CAMBS	14-05-86		6	<	5			<	5	
	MILK		CAMBS	15-05-86		5	,	3				3	
	MILK		CAMBS	15-05-86		14		1				1	
	MILK		CAMBS	22-05-86		3		1				1	
	MILK		CAMBS	03-06-86	<		<	7	<	8	<	15	
	MILK		CAMBS	24-06-86			-	0		0	-	0	
	MILK		CAMBS	29-08-86			<	1	<	1	<	2	
	MILK		CHESHIRE	05-05-86		10	,	-	,	-		0	
	MILK		CHESHIRE	05-05-86		4						0	
	MILK		CHESHIRE	07-05-86	<	_	(12	<	15	<	27	
	MILK		CHESHIRE	08-05-86	<			17	(<	28	
								000					

No.	Туре		County	Sample Date	I	131	Cs	137	Cs	134	Tot	Cs	Comments
					-			-					
249	MILK	COM	CHESHIRE	08-05-86	<	8	<	14	<	11	<	25	
	MILK		CHESHIRE	08-05-86		15	<	15	<	17	<	32	
	MILK		CHESHIRE	09-05-86	<	9	<	13	<	10	<	23	
	MILK		CHESHIRE	09-05-86	•	12	(12	<	13	(25	
	MILK		CHESHIRE	10-05-86		10	(13	<	13	<	26	
	MILK		CHESHIRE	11-05-86		26	`	19	<	14	`	33	
	MILK		CHESHIRE	11-05-86	<	6	<	11	<	12	`	23	
	MILK		CHESHIRE	11-05-86	(7	<	14	(13	`	27	
	MILK		CHESHIRE	12-05-86	`	12	`	23	`	16	`	39	
	MILK		CHESHIRE	12-05-86	<	5	<	12	<	14	<	26	
	MILK		CHESHIRE	12-05-86	<		<	15	<	10	<	25	
	MILK		CHESHIRE	13-05-86	(7	(10	<	10	<	20	
	MILK		CHESHIRE	13-05-86	<	7	<	13	<	10	<	23	
	MILK		CLEVELAND	08-05-86		19						0	
	MILK		CLEVELAND	08-05-86		8				_		0	
	MILK		CLEVELAND	11-05-86		12		10		7		17	
	MILK		CLEVELAND	13-05-86		9		10		4		14	
	MILK		CLEVELAND	13-05-86		9		12		7		19	
	MILK		CLEVELAND	13-05-86		5		2				2	
	MILK		CLEVELAND	13-05-86		16		5		2		7	
	MILK		CLEVELAND	13-05-86		7		6				6	
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665	MILK	CDM	CLEVELAND	13-05-86		5		2				2	
660	MILK	COM	CLEVELAND	13-05-86		4		2		2		4	
87	MILK	COM	CORNWALL	05-05-86		4		0				0	
311	MILK	COM	CORNWALL	05-05-86		6		2		1		3	
76	MILK	COM	CORNWALL	05-05-86		8		0				0	
312	MILK	COM	CORNWALL	06-05-86		4		1				1	
88	MILK	CON	CORNWALL	06-05-86		4		0				0	
77	MILK	COM	CORNWALL	06-05-86		6		2		0		2	
89	MILK	CON	CORNUALL	07-05-86		3		1		1		2	
313	MILK	CDM	CORNWALL	07-05-86		4		2		1		3	
78	MILK	CDM	CORNUALL	07-05-86		6		1		1		2	
90	MILK	COM	CORNUALL	08-05-86		3		0				0	
	MILK		CORNUALL	08-05-86		3		1		1		2	
	MILK		CORNWALL	08-05-86		8		1				1	
	MILK		CORNWALL	14-05-86		4		2	<	1	<	3	
	MILK		CORNWALL	15-05-86		3	<	1	<	1	<	2	
	MILK		CORNWALL	16-05-86	110	4		1	<	1	<	2	
	MILK		CORNWALL	29-08-86		,	<	1		1	<	2	
	MILK		CORNWALL	16-09-86			(11	<	10	<	21	
	MILK		CORNWALL	10-11-86			(7	(6	(13	
	MILK		CUMBRIA	03-05-86		74	`	45	,	V	`	45	
	MILK		CUMBRIA	03-05-86		270		148		80		228	
	MILK		CUMBRIA	03-05-86		183		97		00		97	
												32	
	MILK		CUMBRIA	03-05-86		142		32		100			
	MILK		CUMBRIA	03-05-86		360		200		125		325	
	MILK		CUMBRIA	04-05-86		371		355		220		575	
	MILK		CUMBRIA	04-05-86		240		200		113		313	
	MILK		CUMBRIA	04-05-86		11		27		13		40	
361	MILK	CUW	CUMBRIA	04-05-86		224		154		98		252	

No .	Туре		County	Sample Date	I131	Cs137	Cs134	Tot Cs	Comments
434	MILK	CUM	CUMBRIA	04-05-86	16	15	13	28	
	MILK		CUMBRIA	04-05-86	17	25	18	43	
	MILK		CUMBRIA	04-05-86	16	23	17	40	
	MILK		CUMBRIA	04-05-86	11	21	12	33	
	MILK		CUMBRIA	04-05-86	160	210	120	330	
	MILK		CUMBRIA	04-05-86	87	94	43	137	
	MILK		CUMBRIA	04-05-86	200	99	39	138	
	MILK		CUMBRIA	04-05-86	150	130	81	211	
	MILK		CUMBRIA	05-05-86	166	118	64	182	
	MILK		CUMBRIA	05-05-86	182	297	136	433	
	MILK		CUMBRIA	05-05-86	160	150	97	247	
	MILK		CUMBRIA	05-05-86	120	220	150	370	
	MILK		CUMBRIA	05-05-86	110	80		80	
	MILK		CUMBRIA	05-05-86	40	10	6	16	
	MILK		CUMBRIA	05-05-86	100	130	76	206	
	MILK		CUMBRIA	05-05-86	65	25		25	
	MILK		CUMBRIA	05-05-86	270	230	140	370	
	MILK		CUMBRIA	05-05-86	166	64	50	114	
	MILK		CUMBRIA	05-05-86	163	58	37	95	
	MILK		CUMBRIA	05-05-86	< 233	356	211	567	
	MILK		CUMBRIA	05-05-86	156	54	40	94	
	MILK		CUMBRIA	06-05-86	170	330	210	540	
	MILK		CUMBRIA	06-05-86	10	22		22	
	MILK		CUMBRIA	06-05-86	150	15		15	
	MILK		CUMBRIA	06-05-86	44	29		29	
479	MILK	CON	CUMBRIA	06-05-86	110	170	118	288	
480	MILK	COM	CUMBRIA	06-05-86	98	250	130	380	
485	MILK	COM	CUMBRIA	06-05-86	100	130	67	197	
491	MILK	COM	CUMBRIA	06-05-86	20	< 10	< 3	(13	
487	MILK	COM	CUMBRIA	06-05-86	85		58	58	
496	MILK	COM	CUMBRIA	06-05-86	55	20	< 10	< 30	
	MILK		CUMBRIA	06-05-86	150	66	42	108	
443	MILK	COM	CUMBRIA	06-05-86	120	110	74	184	
1640	MILK	CDM	CUMBRIA	06-05-86	110	99		99	
	MILK		CUMBRIA	06-05-86	150	330	210	540	
	MILK		CUMBRIA	06-05-86	170	220	130	350	
	MILK		CUMBRIA	06-05-86	120	130	120	250	
	MILK		CUMBRIA	06-05-86	22	40		40	
	MILK		CUMBRIA	06-05-86	11	22		22	
	MILK		CUMBRIA	06-05-86	89	260	150	410	
	MILK		CUMBRIA	06-05-86	98	79		79	
	MILK		CUMBRIA	06-05-86	16	17		17	
	MILK		CUMBRIA	06-05-86	110	99		99	
	MILK		CUMBRIA	06-05-86	1 40	21	,	21	
	MILK		CUMBRIA	06-05-86	220	300	180	480	
	MILK		CUMBRIA	07-05-86	130	35		35	
	MILK		CUMBRIA	07-05-86	100	40	100	40	
	MILK		CUMBRIA	07-05-86	140	160	120	280	
	MILK		CUMBRIA	07-05-86	64	110	83	193	
	MILK		CUMBRIA	07-05-86	100	170	88	258	
411	MILK	COM	CUMBRIA	07-05-86		36		36	

No .	Туре		County	Sample Date	I131	Cs137	Cs134	Tot Cs	Comments
,									
450	MILK	COM	CUMBRIA	07-05-86	160	140	100	240	
463	MILK	COM	CUMBRIA	07-05-86	220	160	90	250	
436	MILK	COM	CUMBRIA	07-05-86	120	64	43	107	
428	MILK	COM	CUMBRIA	07-05-86	71	52		52	
423	MILK	COM	CUMBRIA	07-05-86	78	39		39	
460	MILK	COM	CUMBRIA	07-05-86	22	23		23	
390	MILK	COM	CUMBRIA	07-05-86	160	280	150	430	
459	MILK	COM	CUMBRIA	07-05-86	23	38		38	
383	MILK	COM	CUMBRIA	07-05-86	85	150	100	250	
373	MILK	COM	CUMBRIA	07-05-86	160	320	210	5 30	
379	MILK	COM	CUMBRIA	08-05-86	1 38		180	180	1
374	MILK	COM	CUMBRIA	08-05-86	1 30	330	78	408	
474	MILK	CDM	CUMBRIA	08-05-86	110	230	97	327	
488	MILK	COM	CUMBRIA	08-05-86	63	109	61	170	
391	MILK	COM	CUMBRIA	08-05-86	120	240	150	390	
492	MILK	COM	CUMBRIA	08-05-86	25	24	13	37	
457	MILK	COM	CUMBRIA	08-05-86	34	110	78	188	
497	MILK	COM	CUMBRIA	08-05-86	65	65	32	97	
418	MILK	COU	CUMBRIA	08-05-86	60	54		54	
429	MILK	COM	CUMBRIA	08-05-86	59	51		51	
730	MILK	CDM	CUMBRIA	08-05-86	94	35		35	;
	MILK		CUMBRIA	08-05-86	130	180	97	277	1
	MILK		CUMBRIA	08-05-86	150	220	110	330	
	MILK		CUMBRIA	08-05-86	92	160		160	
	MILK		CUMBRIA	08-05-86	70	41		41	
	MILK		CUMBRIA	08-05-86	300	79	58	137	
	MILK		CUMBRIA	08-05-86	120	150	90	240	i, d
	MILK		CUMBRIA	08-05-86	110	65	39	104	
	MILK		CUMBRIA	08-05-86	49	120	58	178	
	MILK		CUMBRIA	09-05-86	140			79	
	MILK		CUMBRIA	09-05-86	100	210	150	360	
	MILK		CUMBRIA	09-05-86	66	⟨ 35		(35	
	MILK		CUMBRIA	09-05-86	53	49		4	
731	MILK	COM	CUMBRIA	09-05-86	76	< 28		< 28	3
	MILK		CUMBRIA	09-05-86	120	160	110	270	
493	MILK	COM	CUMBRIA	09-05-86	23	20	12	32	
	MILK		CUMBRIA	09-05-86	75	120		120	
	MILK		CUMBRIA	09-05-86	120	120	76	196	
498	MILK	COW	CUMBRIA	09-05-86	56	62	33	95	
	MILK		CUMBRIA	09-05-86	110	120	81	20:	
	MILK		CUMBRIA	09-05-86	< 24	6	1		
	MILK		CUMBRIA	09-05-86	71	42	(39	< 8:	l
	MILK		CUMBRIA	09-05-86	48	88	49	13	
	MILK		CUMBRIA	09-05-86	55	22		22	
	MILK		CUMBRIA	09-05-86	23	47		4	
	MILK		CUMBRIA	09-05-86	113	303	162	465	
	MILK		CUMBRIA	09-05-86	110	290	190	480	
	MILK		CUMBRIA	10-05-86	91	250	170	420	
	MILK		CUMBRIA	10-05-86	74	180	110	290	
	MILK		CUMBRIA	10-05-86	200	84	55	139	
	MILK		CUMBRIA	10-05-86	48	58	44	102	
								_ ,,	

No .	Туре		County	Sample Date	I 1 31	Cs137	Cs134	Tot Cs	Comments
	MILK		CUMBRIA		94	120	94	214	
	MILK		CUMBRIA	10-05-86	42	96	51	147	
	MILK		CUMBRIA	10-05-86	61	160	110	270	
	MILK		CUMBRIA	10-05-86	25	16	< 8	< 24	
	MILK		CUMBRIA	10-05-86	47	33		33	
	MILK		CUMBRIA	10-05-86	00	100	50	150	
	MILK		CUMBRIA	10-05-86	31	35	19	54	
	MILK		CUMBRIA	10-05-86	63	270	147	417	
	MILK		CUMBRIA		51	90	54	144	
	MILK		CUMBRIA		78	150	69	219	
	MILK		CUMBRIA		32	66		66	
	MILK		CUMBRIA		60	150	100	250	
	MILK		CUMBRIA		56	170	110	280	
	MILK		CUMBRIA		180	110	58	168	
	MILK		CUMBRIA		41	31		31	
	MILK		CUMBRIA		29	70	37	107	
	MILK		CUMBRIA		73	260	140	400	
	MILK		CUMBRIA		43	230	130	360	
	MILK		CUMBRIA		49	98	42	1 40	
	MILK		CUMBRIA		68		100	260	
	MILK		CUMBRIA		41	120	92	212	
	MILK		CUMBRIA		31	27	< 26	< 53	
	MILK		CUMBRIA		73	130	98	228	
	MILK		CUMBRIA		82	110	60	170	
	MILK		CUMBRIA		170	84	52	1 36	
	MILK			12-05-86	30	98	59	157	
	MILK		CUMBRIA		65	220	140	360	
	MILK		CUMBRIA		77	100	80	180	
	MILK		CUMBRIA		21	97	66	163	
	MILK		CUMBRIA		24	92	68	160	
	MILK		CUMBRIA		28	130	91	221	
	MILK		CUMBRIA		70	140	97	237	
	MILK		CUMBRIA		28	88	59	147	
	MILK		CUMBRIA	13-05-86	26	73	55	128	
	MILK		CUMBRIA	13-05-86	31	120	85	205	
	MILK		CUMBRIA	13-05-86	35	81	46	127	
	MILK		CUMBRIA	13-05-86	31	83	46	129	
	MILK		CUMBRIA	13-05-86	28	180	120	300	
	MILK		CUMBRIA	14-05-86	55	130	94	224	
	MILK		CUMBRIA	14-05-86	95	78	54	132	
	MILK		CUMBRIA	14-05-86	37	95	61	156	
	MILK		CUMBRIA	14-05-86	28	110	65	175	
	MILK		CUMBRIA	14-05-86	33	70	57	127	
	MILK		CUMBRIA	15-05-86	23	69	34	103	
	MILK		CUMBRIA	15-05-86	28	98	64	162	
	MILK		CUMBRIA	15-05-86	20	140	100	240	
	MILK		CUMBRIA	15-05-86	41	86	48	134	
	MILK		CUMBRIA	15-05-86	21	58	45	103	
	MILK		CUMBRIA	15-05-86	13	45	24	69	
	MILK		CUMBRIA	15-05-86	74	110	76	186	
132	MILK	CUW	CUMBRIA	16-05-86	26	74		74	

No .	Туре		County	Sample Date	I	131	Cs137		134	To	Cs	Comments
775	MTIL	0.011	ALIMADATA	1/ 05 0/		7.1	0.7		45		170	
	MILK		CUMBRIA	16-05-86		31	93		45		138	
	MILK		CUMBRIA	16-05-86		23	84		64		148	
	MILK		CUMBRIA	16-05-86		30	85		57		142	
	MILK		CUMBRIA	16-05-86		22	99		70		169	
	MILK		CUMBRIA	16-05-86		18	67	,	51	,	118	
	MILK		CUMBRIA	16-05-86		27	72	<	57		129	
	MILK		CUMBRIA	16-05-86		25	52	<	60	<	112	
	MILK		CUMBRIA	16-05-86		30	141		82		223	
	MILK		CUMBRIA	16-05-86		27	150		85		235	
	MILK		CUMBRIA	16-05-86		27	89		57		146	
	MILK		CUMBRIA	19-05-86	,	^	120		71		191	
	MILK		CUMBRIA	19-05-86	<	9	25		13		38	
	MILK		CUMBRIA	19-05-86	<	25	82		33		115	
	MILK		CUMBRIA	19-05-86		25	97		46		143	
	MILK		CUMBRIA	19-05-86		17	82		42		124	
	MILK		CUMBRIA	19-05-86	,	28	130		81		211	
	MILK		CUMBRIA	19-05-86	<		57		41		98	
	MILK		CUMBRIA	20-05-86	<	18	56		38		94	
	MILK		CUMBRIA	20-05-86	<	17	54		70		54	
	MILK		CUMBRIA	20-05-86	<	17	65		39		104	
	MILK		CUMBRIA	20-05-86	<	17	73		51		124	
	MILK		CUMBRIA	20-05-86	<	26	61		67		61	
	MILK		CUMBRIA	20-05-86	<	32	94		57		151	
	MILK		CUMBRIA	20-05-86	<	29	120		68		188	
	MILK		CUMBRIA	20-05-86	<	16	57		41		98	
	MILK		CUMBRIA	20-05-86	<	29	100		69		169	
	MILK		CUMBRIA	20-05-86	<	28	120		79		199	
	MILK		CUMBRIA	20-05-86	<	17	120		69		189	
	MILK		CUMBRIA	20-05-86	<	18	81		51		132	
	MILK		CUMBRIA	21-05-86		17			60		138	
	MILK		CUMBRIA	21-05-86	<	30	130		78		208	
	MILK		CUMBRIA	21-05-86	<	17	76		42		118	
	MILK		CUMBRIA	21-05-86	<	24	89		53		142	
	MILK		CUMBRIA	21-05-86	,	21			61		191	
	MILK		CUMBRIA	21-05-86	<	16	71		40		111	
	MILK		CUMBRIA	23-05-86	<	23	100		45		145	
	MILK		CUMBRIA	23-05-86	<	16	61		48		109	
	MILK		CUMBRIA	27-05-86	<	18	109		67		176	
	MILK		CUMBRIA	27-05-86	<	18	103		64		167	
	MILK		CUMBRIA	27-05-86	<	17	65	,	41	,	106	
	MILK		CUMBRIA	27-05-86	<	17	33	<	41	<	74	
	MILK		CUMBRIA	27-05-86	<	17	45	,	36	,	81	
	MILK		CUMBRIA	27-05-86	<	17	46	<	42	<	88	
	MILK		CUMBRIA	27-05-86	<	10	78		37		115	
	MILK		CUMBRIA	27-05-86	<	11	72	,	45	,	117	
	MILK		CUMBRIA	16-10-86			(1	<	1	<	2	
	MILK		CUMBRIA	09-11-86			19		9		28	
	MILK		CUMBRIA	10-11-86			5		2		7	
	MILK		CUMBRIA	10-11-86			25		11		36	
	MILK		CUMBRIA	10-11-86			14	,	6	,	20	
4190	MILK	COM	CUMBRIA	10-11-86			4	<	2	<	6	

No. Type	County	Sample Date	I131	Cs137	Cs134	Tot Cs	Comments
4803/MILK COW	CUMBRIA	11-11-86		6	2	8	
4800 MILK COW	CUMBRIA	11-11-86		14	7	21	
4801 MILK COW	CUMBRIA	11-11-86		8	3	11	
4798 MILK CDW	CUMBRIA	11-11-86			< 2	(6	
4797 MILK COW	CUMBRIA	11-11-86		6		9	
4805 MILK COW	CUMBRIA	15-11-86		24		37	
4943 MILK COW	CUMBRIA	17-11-86		7	3	10	
4942 MILK CDW	CUMBRIA	17-11-86		5	2	7	
4937 MILK COW	CUMBRIA	17-11-86		26	11	37	
4938 MILK COW	CUMBRIA	18-11-86		4	(2	(6	
4939 MILK COW	CUMBRIA	18-11-86		16	8	24	
4936 MILK CDW	CUMBRIA	18-11-86		19	9	28	
4935 MILK COW	CUMBRIA	18-11-86		29	13	42	
4944 MILK COW	CUMBRIA	18-11-86		7	3	10	
4945 MILK COW	CUMBRIA	18-11-86		10	4	14	
4941 MILK COW	CUMBRIA	18-11-86		16	7	23	
4940 MILK COW	CUMBRIA	18-11-86		18	7	25	
4991 MILK COW	CUMBRIA	24-11-86		6	2	8	
4993 MILK COW	CUMBRIA	24-11-86		19	7	26	
4986 MILK COW	CUMBRIA	24-11-86		4	2	6	
4992-MILK COW	CUMBRIA	24-11-86		11	6	17	
4985 MILK COW	CUMBRIA	24-11-86		21	10	31	
4987 MILK COW	CUMBRIA	24-11-86		16	8	24	
4984 MILK COW	CUMBRIA	24-11-86		24	11	35	
4990 MILK COW	CUMBRIA	25-11-86		6	2	8	
4989 MILK COW	CUMBRIA	25-11-86		11	6	17	
4988 MILK COW	CUMBRIA	25-11-86		20	9		
4994 MILK COW	CUMBRIA	26-11-86		10			
5098 MILK COW	CUMBRIA	01-12-86		5			
5095 MILK COW	CUMBRIA	01-12-86		17	6		
5100 MILK COW	CUMBRIA	01-12-86		13	6		
5097 MILK COW	CUMBRIA	01-12-86		22	10		
5096 MILK COW	CUMBRIA	01-12-86		8	3		
5094 MILK COW	CUMBRIA	01-12-86		13	6		
5091 MILK COW	CUMBRIA	02-12-86		17	7		
5093 MILK COW	CUMBRIA	02-12-86		6	2		
5092 MILK COW	CUMBRIA	02-12-86		12	6	18	
5090 MILK COW	CUMBRIA	02-12-86		23	10	33	
5099 MILK COW	CUMBRIA	04-12-86		11	6		
5085 MILK CDW	CUMBRIA	09-12-86		13	5	18	
5081 MILK COW	CUMBRIA	09-12-86		6	3		
5088 MILK COW	CUMBRIA	09-12-86		12	5		
5084 MILK COW	CUMBRIA	09-12-86		19	8	27	
5082 MILK COW	CUMBRIA	09-12-86		18	8		
5087 MILK COW	CUMBRIA	09-12-86		9	4		
5086 MILK COW	CUMBRIA	09-12-86		22	9		
5083 MILK COW	CUMBRIA	09-12-86		13	7		
5080 MILK COW	CUMBRIA	09-12-86		25	10		
5089 MILK COW	CUMBRIA	10-11-87		11	6		
276 MILK COW	DERBS	05-05-86	69			0	
277 MILK COW	DERBS	06-05-86	152			0	

No .	Туре		County	Sample Date	Ii	31	Csi	37	Cs1	34	Tot	Cs	Comments
^7	MTIL	001	DEDDC	00 05 94		0.0						0	
	MILK		DERBS	09-05-86	,	80.						0	
	MILK		DERBS	10-05-86		68						0	
	MILK		DERBS	11-05-86		50						0	
	MILK		DERBS	12-05-86		41						0	
	3 MILK		DERBS	13-05-86		5						0	
	MILK		DERBS	14-05-86		22						0	
	9 MILK		DERBS	15-05-86		33						0	
	MILK		DERBS	16-05-86	,	51		_			,	0	
	MILK		DERBS	19-05-86	<	6	<	5			<	5	
	7 MILK		DERBS	20-05-86		9						0	
	7 MILK		DERBS	21-05-86	<	6		7				7	
	MILK		DERBS	22-05-86		7		4				4	
	B MILK		DEVON	04-05-86		3	<	5			<	5	
	5 WITK		DEVON	05-05-86		13		0				0	
	4 MILK		DEVON	05-05-86		14		1				1	
	6 MILK		DEVON	05-05-86		11		0		1		1	
	6 MILK		DEVON	05-05-86		16		2		1		3	
	4 MILK		DEVON	06-05-86		6						0	
	0 MILK		DEVON	06-05-86		20		1				1	
11	6 MILK	COM	DEVON	06-05-86		16		1		1		2	
12	3 MILK	CDM	DEVON	06-05-86		13		1				1	
11	3 MILK	COM	DEVON	06-05-86		8		1				1	
11	7 MILK	COM	DEVON	07-05-86		14		0				0	
30	4 MILK	COM	DEVON	07-05-86		11		1				1	
11	2 MILK	CDM	DEVON	07-05-86		4		1				1	
11	1 MILK	COM	DEVON	07-05-86		4		0				0	
11	8 MILK	COM	DEVON	08-05-86		11		2				2	
12	5 MILK	COM	DEVON	08-05-86		8		0				0	
12	4 MILK	CDM	DEVON	08-05-86		4		0				0	
10	7 MILK	COM	DEVON	08-05-86		5		0				0	
11	9 MILK	COM	DEVON	09-05-86		6		0		1		1	
12	O MILK	COM	DEVON	10-05-86		6		1		1		2	
12	1 MILK	COM	DEVON	11-05-86		5		0		0		0	
63	5 MILK	COM	DEVON	12-05-86		6		1	<	1	<	2	
63	6 MILK	COM	DEVON	13-05-86		5		1	<	1	<	2	
70	6 MILK	COM	DEVON	14-05-86		7	<	1	<	1	<	2	
87	O MILK	COM	DEVON	15-05-86		4		1	<	1	<	2	
87	3 MILK	COM	DEVON	16-05-86		4		1		1		2	
340	6 MILK	COM	DEVON	03-09-86			<	30	<	24	<	54	
10	5 MILK	COW	DORSET	05-05-86		9		1				1	
40	8 MILK	COM	DURHAM	04-05-86		16		23	<	25	<	48	
	7 MILK		DURHAM	05-05-86		5						0	
	2 MILK		DURHAM	05-05-86		14						0	
	5 MILK		DURHAM	07-05-86	<	5	<	2			<	2	
	8 MILK		DURHAM	07-05-86	<	5	-	_				0	
	4 MILK		DURHAM	07-05-86	<	5	(2			<	2	
	7 MILK		DURHAM	08-05-86	-	37	-	20				20	
	1 MILK		DURHAM	08-05-86		13	<	3	<	3	<	6	
	3 MILK		DURHAM	08-05-86	<	5	•	_		-		0	
	9 MILK		DURHAM	08-05-86		5						0	
	6 MILK		DURHAM	08-05-86		19		14				14	
												-	

No .	Туре		County	Sample Date	I131	Cs	137	Csi	34	Tot	Cs	Comments
552	MILK	COM	DURHAM	09-05-86	10	<	3	<	3	<	6	
	MILK		DURHAM	09-05-86	2						0	
574	MILK	COW	DURHAM	09-05-86	(5						0	
573	MILK	CDW	DURHAM	09-05-86	< 5						0	
553	MILK	COM	DURHAM	10-05-86	10	<	3	<	3	<	6	
530	MILK	COM	DURHAM	11-05-86	2						0	
529	MILK	COM	DURHAM	11-05-86	13		9				9	
554	MILK	COM	DURHAM	11-05-86	11	<	3	<	3	<	6	
585	MILK	COM	DURHAM	11-05-86	10		10		3		13	
555	MILK	COM	DURHAM	12-05-86	17	<	3	<	3	<	6	
658	MILK	COM	DURHAM	12-05-86	16						0	
667	MILK	COM	DURHAM	13-05-86	10		16		15		31	
556	MILK	COM	DURHAM	13-05-86	6	<	3	<	3	<	6	
895	MILK	CDM	DURHAM	14-05-86	0		2				2	
896	MILK	COM	DURHAM	15-05-86	4		4				4	
887	MILK	COM	DURHAM	15-05-86	6		3				3	
	MILK		ESSEX	04-05-86	91		26		15		41	
	MILK		ESSEX	04-05-86	109						0	
	MILK		ESSEX	05-05-86	108		31		18		49	
	MILK		ESSEX	05-05-86	82		13		7		20	
	MILK		ESSEX	05-05-86	83		20		10		30	
	MILK		ESSEX	05-05-86	99		32	<		<	52	
	MILK		ESSEX	06-05-86	45		4		2		6	
	MILK		ESSEX	06-05-86	75		28		14		42	
	MILK		ESSEX	06-05-86	68		12		6		18	
	MILK		ESSEX	06-05-86	68		22		12		34	
	MILK		ESSEX	06-05-86	1 41		18		8		26	
	MILK		ESSEX	06-05-86	96		29		20		49	
	MILK		ESSEX	06-05-86	50		12		1		13	
	MILK		ESSEX	07-05-86	50		9	,	0	,	9	
	MILK		ESSEX	07-05-86	163		11	<	8	<	19	
	MILK		ESSEX	07-05-86	37		4		2		6	
	MILK		ESSEX	07-05-86	53		26		12		38	
	MILK		ESSEX	08-05-86	41		3		15		18	
	MILK		ESSEX ESSEX	08-05-86 08-05-86	85 41		35		17 5		52	
	MILK		ESSEX	08-05-86			12 15				17	
	MILK		ESSEX	08-05-86	40		0		8		23	
	MILK		ESSEX	09-05-86	31 32		7		7		0 14	
	MILK		ESSEX	09-05-86	25		13		7		20	
	MILK		ESSEX	09-05-86	33		4		2		6	
	MILK		ESSEX	09-05-86	34		25		11		36	
	MILK		ESSEX	10-05-86	25		19		10		29	
	MILK		ESSEX	10-05-86	18		11		9		20	
	MILK		ESSEX	10-05-86	23		8		6		14	
	MILK		ESSEX	10-05-86	26		4		V		4	
	MILK		ESSEX	11-05-86	17		1		7		7	
	MILK		ESSEX	11-05-86	21		6				6	
	MILK		ESSEX	11-05-86	17		8		2		10	
	MILK		ESSEX	11-05-86	15		13		6		19	
	MILK		ESSEX	13-05-86	11		15		7		22	

No .	Туре		County	Sample Date	I131	Cs	137	Cs:	134	Tot	Cs	Comments
680	MILK	CULI	ESSEX	13-05-86	17		7		3		10	
	MILK		ESSEX	13-05-86	10		10		5		15	
	MILK		ESSEX	13-05-86	12		1		•		1	
	MILK		ESSEX	14-05-86	24		5		5		10	
	MILK		ESSEX	15-05-86	7		12		6		18	
	MILK		ESSEX	15-05-86	10		5		•	<	5	
	MILK		ESSEX	15-05-86	10		11				11	
	MILK		ESSEX	15-05-86	7		13		4		17	
	MILK		ESSEX	19-05-86	6		11		4		15	
	MILK		ESSEX	19-05-86	6		11		4		15	
	MILK		ESSEX	20-05-86	3		8		4		12	
	MILK		ESSEX	28-08-86	-	<	19	<	17	<	36	
	MILK		GLOS	05-05-86	25		7				7	
	MILK		GLOS	05-05-86	41						0	
	MILK		GLDS	05-05-86	57		8				8	
	MILK		GLOS	05-05-86	25						0	
	MILK		GLOS	05-05-86	94						0	
	MILK		GLOS	05-05-86	43	3					0	
	MILK		GLOS	06-05-86	32						0	
	MILK		GLOS	06-05-86	19		4		3		7	
	MILK		GLOS	06-05-86	39						0	
	MILK		GLOS	07-05-86	19						0	
	MILK		GLOS	09-05-86	7		2		1		3	
	MILK		GLOS	10-05-86	4		0	<	1	<	1	
337	MILK	CDM	GLOS	11-05-86	3		1		1		2	
338	MILK	COM	GLOS	12-05-86	2		1		1		2	
339	MILK	CDM	GLOS	13-05-86	3	;	1	<	1	<	2	
342	MILK	COM	GLOS	13-05-86	2	2	1				1	
341	MILK	CDM	GLOS	13-05-86	9)					0	
343	MILK	COM	GLOS	13-05-86							0	
340	MILK	COM	GLOS	13-05-86	1						0	
	MILK		GLOS	13-05-86	9)					0	
865	MILK	CDM	GLOS	14-05-86	19)					0	
	MILK		GLOS	15-05-86	10)					0	
	MILK		HANTS	04-05-86	70		3				3	
	MILK		HANTS	04-05-86	89		2			<	2	
	MILK		HANTS	05-05-86	77		3		2		5	
	MILK		HANTS	05-05-86	10	(48	<	1	<	49	
	MILK		HANTS	05-05-86	69			<	2	<	2	
	MILK		HANTS	05-05-86	8.		2	<	2	<	4	
	MILK		HANTS	06-05-86	103						0	
	MILK		HANTS	06-05-86	5		4		1		5	
	MILK		HANTS	06-05-86	63		5		1		6	
	MILK		HANTS	07-05-86	3		3		1		4	
	MILK		HANTS	08-05-86	3		3		2	_	5	
	MILK		HANTS	08-05-86	31		2	<	1	<	3	
	MILK		HANTS	09-05-86	28		4		2	-	6	
	MILK		HANTS	10-05-86	25			<	2	<	3	
	MILK		HANTS	10-05-86	21		4	,	,	,	4	
	MILK		HANTS	10-05-86	42			<	1	<	2	
597	MILK	CUM	HANTS	11-05-86	10	,	2	<	1	<	3	

No .	Туре		County	Sample Date	I	131	Csi	.37	Cs1	34	Tot	Cs	Comments
5.08/	MILK	COLL	HANTS	12-05-86		12		8	<	9	<	17	
	MILK		HANTS	12-05-86		14		4	<	1	<	5	
	MILK		HANTS	12-05-86		25	<	1	<	1	<	2	
	MILK		HANTS	14-05-86	<	8	(2	<	2	<	4	
	MILK		HANTS	14-05-86	`	10	`	10	(1	(11	
	MILK		HANTS	14-05-86		7	<	2	<	2	<	4	
	MILK		HANTS	14-05-86	<	-	(12	<	1	<	13	
	MILK		HANTS	14-05-86	`	20	(2	<	2	<	4	
	MILK		HANTS	14-05-86	<	23	(2	(2	<	4	
	MILK		HANTS	14-05-86	`	40	`	_	`	2	`	0	
	MILK		HANTS	15-05-86		9		3	<	2	<	5	
	MILK		HANTS	16-05-86		20	<	2	<	2	<	4	
	MILK		HANTS	20-05-86	<	15	(10	<	8	`	18	
	MILK		HANTS	20-05-86	<	3	(2	(2	<	4	
	MILK		HANTS	26-06-86	`		`	0	,	0	`	0	
	MILK		HEREFORD	05-05-86		80		6	<	19	<	25	
	MILK		HEREFORD	05-05-86		88		V	`	. /	,	0	
	MILK		HEREFORD	06-05-86		60						0	
	MILK		HEREFORD	06-05-86		95						0	
	MILK		HEREFORD	07-05-86		88						0	
	MILK		HEREFORD	07-05-86		93						0	
	MILK		HEREFORD	08-05-86		88						0	
	MILK		HEREFORD	08-05-86		78						0	
	MILK		HEREFORD	09-05-86		103				20		20	
	MILK		HEREFORD	10-05-86		64				17		17	
	MILK		HEREFORD	11-05-86		72		27		21		48	
	MILK		HEREFORD	12-05-86		65		17				17	
	MILK		HEREFORD	13-05-86		5		2				2	
	MILK		HEREFORD	14-05-86		27						0	
	MILK		HEREFORD	14-05-86		36						0	
	MILK		HEREFORD	15-05-86		32						0	
	MILK		HEREFORD	16-05-86		27						0	
	MILK		HEREFORD	20-05-86		14		9	<	19	<	28	
	MILK		HEREFORD	22-05-86	<	13		20				20	
	MILK		HERTS	04-05-86		54		3				3	
	MILK		HERTS	04-05-86		31		5				5	
	MILK		HERTS	05-05-86		23		3				3	
190	MILK	COM	HERTS	05-05-86	<	60		4				4	1
4644	MILK	COM	HERTS	06-05-86		27		3		1		4	
	MILK		HERTS	06-05-86		27		5		2		7	2
	MILK		HERTS	06-05-86		50		3	<	2	<	5	
191	MILK	COM	HERTS	07-05-86		52		8				8	
186	MILK	COM	HERTS	08-05-86		25		6		2		8	
	MILK		HERTS	09-05-86		22		5		2		1	
	MILK		HERTS	10-05-86		16		3				3	5
	MILK		HERTS	11-05-86		10		4		2		6)
681	MILK	COM	HERTS	13-05-86		13		5				5	j
753	MILK	COM	HERTS	14-05-86		8		4				4	1
752	MILK	COM	HERTS	15-05-86		7		4		2		6)
531	MILK	COW	HUMBER	05-05-86		45		20				20)
532	MILK	COW	HUMBER	05-05-86		12		4				4	1

No .	Туре		County	Sample Date	I131		Cs137		Cs134		Tot	Cs	Comments
,													
	MILK		HUMBER	05-05-86		100	<	4			<	4	
	MILK		HUMBER	07-05-86		28		30				30	
	MILK		HUMBER	07-05-86		30		7				7	
	MILK		HUMBER	08-05-86		45		24		13		37	
	MILK		HUMBER	08-05-86		28		7	<	4	<	11	
	MILK		HUMBER	09-05-86		121		48		22		70	
	MILK		HUMBER	09-05-86		25		8	<	4	<	12	
	MILK		HUMBER	10-05-86		33		14		10		24	
	MILK		HUMBER	10-05-86		30		11		5		16	
	MILK		HUMBER	11-05-86		23		9		10		19	
	MILK		HUMBER	11-05-86		32		13		7		20	
	MILK		HUMBER	11-05-86		12		7		7		14	
	MILK		HUMBER	12-05-86		33		19		9		28	
538	MILK	COW	HUMBER	12-05-86		25		5	<	7	<	12	
546	MILK	COM	HUMBER	13-05-86		36		18		12		30	
539	MILK	COM	HUMBER	13-05-86		16	<	6	<	6	<	12	
893	MILK	COM	HUMBER	14-05-86		21		9		9		18	
889	MILK	COM	HUMBER	14-05-86		29		14		8		22	
846	MILK	COM	HUMBER	15-05-86	<	34	<	23	<	6	<	29	
847	MILK	COM	HUMBER	19-05-86	<	20	<	5	<	5	<	10	
	MILK		HUMBER	20-05-86		18		10	<	5	<	15	
	MILK		HUMBER	04-09-86			<	28	<	24	<	52	
4492	MILK	CDM	HUMBER	13-10-86			<	28	<	26	<	54	
5020	MILK	CDM	HUMBER	05-11-86			<	6	<	6	<	12	
794	MILK	COM	IOM	06-05-86		49						0	
793	MILK	CDW	IOW	07-05-86		60						0	
795	MILK	COM	IOU	08-05-86		31						0	
617	MILK	COM	IOM	11-05-86		12		6	<	1	<	7	
618	MILK	COM	IOM	12-05-86		16		4	<	1	<	5	
796	MILK	COM	IOM	12-05-86		29						0	
619	MILK	CDM	IOW	13-05-86		11		2	<	1	<	3	
696	MILK	COM	IOU	14-05-86		9		3	<	2	<	5	
797	MILK	CDM	IOU	15-05-86		20						0	
852	MILK	COM	IOM	20-05-86		3	<	2	<	2	<	4	
	MILK		IOW	22-05-86	<	17	<	8	<	6	<	14	
	MILK		KENT	04-05-86		76	<	2	<	2	<	4	
	MILK		KENT	05-05-86		9	<	4			<	4	
54	MILK	COM	KENT	05-05-86		56		8		8		16	
48	MILK	COM	KENT	05-05-86		210		10		4		14	
58	MILK	COM	KENT	05-05-86		76		11	<	8	<	19	
36	MILK	CDM	KENT	05-05-86		100						0	
	MILK		KENT	05-05-86		74	<	2			<	2	
46	MILK	COM	KENT	06-05-86		100						0	
	MILK		KENT	06-05-86		103						0	
	MILK		KENT	06-05-86		41		8		8		16	
	MILK		KENT	06-05-86		42	<	3			<	3	
	MILK		KENT	06-05-86		71		24	<	8	<	32	
	MILK		KENT	06-05-86		41		23	<	8	<	31	
	MILK		KENT	06-05-86		0		3		3		6	
	MILK		KENT	06-05-86		80		28	<	9	<	37	
628	MILK	COM	KENT	06-05-86		9		2				2	