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Expert Group on Monitoring of Radioactive Substances
in the Baltic Sea

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Background

The following paper gives a report of the data that Sweden submitted to the HELCOM MORS database for the sampling year 2019.

Action

The Meeting is invited to take note of the information.

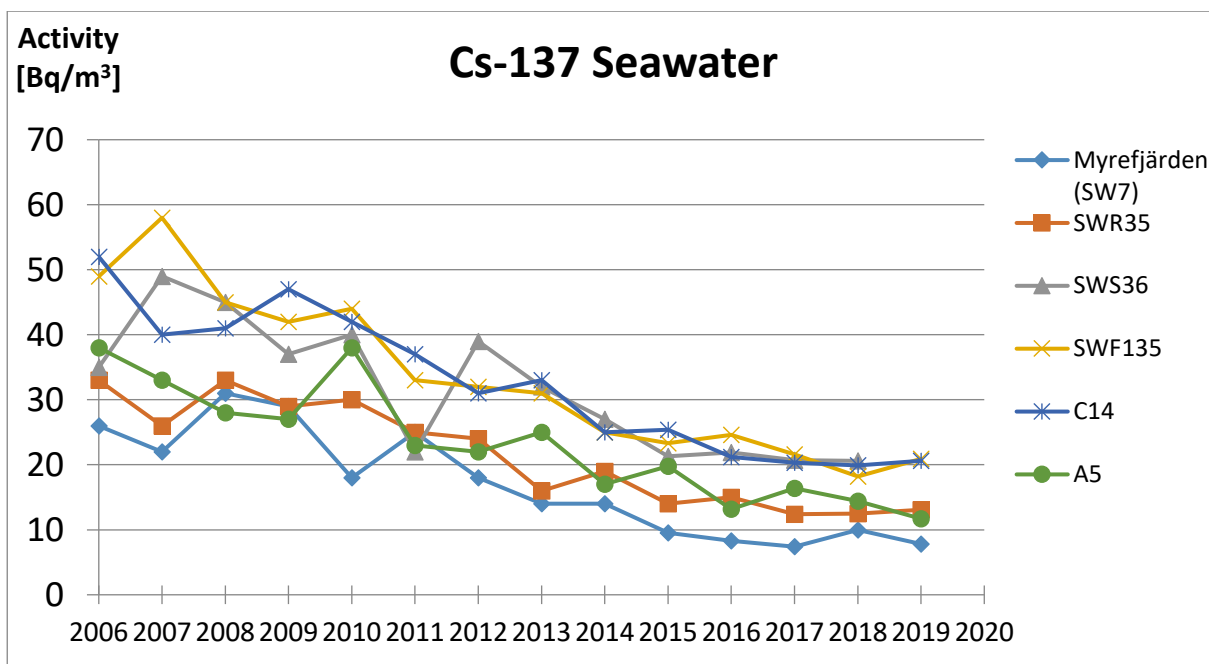
Report from Sweden

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The following paper presents results of biota, sea water and sediment data in tables that has been reported to the database for HELCOM MORS 2020 and representing the sampling year 2019.

The results show that the concentration of the analysed nuclide Cs-137 in the samples taken for biota and seawater are decreasing. The results for sediment shows that the concentration of K-40 is quite uniform for the different depths of the sediment column whereas the concentrations for Cs-137 vary both with depth and where the samples were taken.

As an example, a graph for Cs-137 in seawater is included. The stations were chosen to represent all of the coast of Sweden. Starting with SW7 on the northern part of the West coast of Sweden all along the eastern coast, ending with A5 in the northern Bothnian Bay in the order they are presented in the graph.



1. Results for biota 2019

All data has been reported to the database.

1.1 Fish, all data are reported as activity for fresh weight according to the Recommendation 26/3.

Station/ date	Basin M/H	Species (Number)	K-40 Activity in Bq/kg	Uncertainty %	Cs-137 Activity in Bq/kg	Uncertainty %
			Wet weight		Wet weight	
SW1a 2019-10-06	7/7	Clupea (90)	127,60	6,30	3,70	6,98
SW2*	1/8	Clupea ()				
SW3 2019-09-04	10/10	Clupea (40)	135,80	6,34	4,40	6,79
SW4 2019-09-09	6/6	Clupea (40)	131,20	6,45	3,30	7,83
SW5 2019-10-31	9/9	Gadus (12)	137,30	6,10	3,80	6,70
SW6 2019-11-03	12/12	Gadus (10)	157,40	5,71	0,30	19,41
SW6 2019-10-14	12/12	Clupea (30)	142,70	6,18	0,60	19,76
SW8*	7/17	Clupea ()				
SWF22 2019-09-19	1/8	Clupea (39)	136,40	1,70	5,10	1,30

*no samples taken in 2019 in SW2 or SW8

1.2 Benthic animals

Station/ date	Basin M/H	Species (Number)	K-40 Activity in Bq/kg	Uncertainty %	Cs-137 Activity in Bq/kg	Uncertainty %
			Dry weight		Dry weight	
SW6a 2019-09-09	12/12	Mytilus (30)	260	7,30	<0,753	
SW7 2019-11-04	15/18	Mytilus (20)	277	8,82	<1,19	
SWS15 2019-10-21	10/10	Mytilus (286)	69	19,00	<0,78	

SWS20 2019-09-02	10/10	Macoma (133)	<120		<3,00	
SWF108 2019-09-23	1/8	Macoma (250)	88	10,10	9,50	4,10

1.3 Aquatic plants

Station/ date	Basin M/H	Species (Number)	K-40 Activity in Bq/kg Dry weight	Uncertainty %	Cs-137 Activity in Bq/kg Dry weight	Uncertainty %
SWS15 2019-10-21	10/10	Fucus	910	4,00	9,80	6,00
SWB16 2019-06-07	13/13	Fucus	715	1,65	6,92	4,91
SWR25 2019-09-05	12/12	Fucus	513	1,20	2,25	7,60
SWF111 2019-09-23	1/8	Fucus	810	1,70	11	2,90

Results given in Bq/kg wet weight for fish samples, all others in Bq/kg dry weight

2. Results for sea water 2019

Station/ date	Basin M/H	H-3* Bq/m ³	Uncertainty % m ³	Cs-137 Activity in Bq/m ³	Uncertainty % m ³
SW7 Myrefjärden 2019-04-17	15/18	2,60E+03	31	6,40E+00	27
SW7 Myrefjärden 2019-09-15	15/18			3,88E+00	19
SWR35 2019-04-17	12/12	<2,46E+03		1,31E+01	11
SWR35 2019-10-18	12/12			9,85E+00	6

Station/ date	Basin M/H	H-3 Bq/m ³	Uncertainty % m ³	Cs-137 Activity in Bq/m ³	Uncertainty % m ³
SWS36 2019-09-03	10/10			1,93e+01	5
SWF135 2019-09-15	7/8			2,09e+01	6
C14 2019-09-15	7/7			2,06e+01	6
A5 2019-09-15	7/7			1,17e+01	7

* Few results for H-3 due to malfunction of equipment

3. Results for sediment stations 2019

Station/ date	Basin M/H	Sample slice cm	K-40 Activity in Bq/m ²	Uncertainty %	Cs-137 Activity in Bq/m ²	Uncertainty %
A5 2019-09-18	7/7	0-5	7,61E+03	6	2,06E+03	5
		5-10	1,18E+04	6	2,03E+03	5
		10-15	1,59E+04	5	1,46E+02	13
		15-20	1,96E+04	5	-	
		20-25	1,32E+04	5	-	
		0-5 pool	7,31E+03	6	1,75E+03	5
A13 2019-09-17	7/7	5-10	9,60E+03	6	1,62E+03	5
		10-15	1,72E+04	5	3,21E+02	8
		15-20	1,58E+04	6	-	
		20-25	1,37E+04	6	-	
		0-5 pool	1,54E+04	6	-	
		5-10 pool	6,89E+03	7	1,50E+03	5
C3 2019-09-16	8/8	5-10	1,39E+04	6	3,94E+02	9
		0-5	9,81E+03	6	4,57E+03	5
		5-10	1,40E+04	5	9,85E+03	5
		10-15	1,48E+04	5	1,49E+04	5
		15-20	1,40E+04	6	1,12E+04	5
		20-25	1,88E+04	6	1,67E+03	5
Station/ date	Basin M/H	0-5 pool	1,04E+04	6	4,69E+03	5
		5-10 pool	1,26E+04	6	9,71E+03	5
Station/ date	Basin M/H	Sample slice cm	K-40 Activity in Bq/m ²	Uncertainty %	Cs-137 Activity in Bq/m ²	Uncertainty %

C14	8/8	0-5	2,19E+04	5	4,02E+03	5
2019-09-16		5-10	2,39E+04	5	1,85E+02	12
		10-15	2,18E+04	6	-	
		15-20	2,06E+04	5	-	
		20-23	2,08E+04	6	-	
		0-5 pool	1,63E+04	6	3,50E+03	5
		5-10 pool	2,01E+04	6	3,17E+02	10
SWF135	1/8	0-2	6,45E+03	1,9	4,55E+02	1,2
2019-09-23						
SWR35	13/13	0-2	4,60E+03	1,2	3,63E+01	5,5
2019-10-16						
SWB38	12/12	0-2	4,81E+03	1,65	1,40E+02	2,37
2019-08-28						
SWS36	10/10	0-2	9,66E+03	4	7,81E+02	3
2019-10-21						