

**IUCN OTTER SPECIALIST GROUP BULLETIN
VOLUME 6 PAGES 9 - 11**

Citation: Gutleb, A.C. & Merz, G. (1991) Cesium-137 Levels Detected in Otters from Austria *IUCN Otter Spec. Group Bull.* 6: 9-11

CESIUM-137 LEVELS DETECTED IN OTTERS FROM AUSTRIA

Arno Gutleb¹ and Gabriele Mraz²

¹*Institut für Medizinische Chemie, Veterinärmedizinische Universität Wien, Linke Bahngasse 11, 1030 Wien, Austria*

²*Österreichisches Institut für angewandte Umweltforschung, Gamma-Strahlenmeßstelle. Währingerstr. 59, 1090 Wien, Austria*

Abstract: Pollution seems to be one of the most important causes for the decline of the European otter (*Lutra lutra*). The accident in the Chernobyl nuclear power plant added another aspect to environmental pollution. Few data on cesium-137 contents in otters are available, so levels were measured in 3 otters from Austria. All levels found were very low.

Pollution seems to be one of the most important causes for the decline of the European otter (*Lutra lutra*), but very little is known about hazards to otters in Austria due to heavy metals, organochlorines and PCBs. In order to follow the recommendations of the IUCN Otter Specialist Group on the importance of a pollution risk assessment for any otter conservation programme, WWF Austria initiated investigations on this subject. For this purpose there will be a cooperation of the WWF Research Institute, Institute for Wildlife Biology and Game Management/University of Agriculture, Vienna and the Institute for Medical Chemistry/University of Veterinary Medicine, Vienna (Gutleb 1990).

The accident in the Chernobyl nuclear power plant added another aspect to environmental pollution. Few data on cesium-137 contents in otters are available. Therefore cesium-137 levels were measured in otters from Austria.

Material and Method

In our investigation, cesium-137 contents in muscle tissue were determined by a high purified germanium detector, efficiency 19%.

The explosion of the nuclear power plant in Chernobyl happened on 26 April 1986. Otter no. 1 died October 1987 and the other two in 1990. Two otters were found in the southeast of Austria and the third in the north. Individual data are listed in Table 1. These areas received only a moderate amount of cesium-137 fallout, i.e. 370 - 740 Bq/kg grass, compared with highly contaminated areas having 14 950 Bq/kg (Shonhofer 1986).

Table 1

Otter No	Sex	Age	Weight kg	Found	Place	Cs-137 Bq/kg fresh weight
1	m	old	8.7	04.10.87	Gussing	<5
2	m	young	3.8	31.01.90	Gussing	<5
3	f	old	7.5	20.05.90	Pfaffenschlag	

Results

Cesium-137 contents in muscle tissues of otters 1 and 2 were below the limit of detection. In otter 3, tissue levels of 7 Bq/kg fresh weight were found.

Discussion

There are only few available cesium-137 data on otters. In Georgia a maximum content of 785.9 Bq/kg (average 252.5 Bq/kg) in muscle tissues of *Lutra canadensis* which were collected in 1976-1977 was measured. In addition bones of *Lutra canadensis* have been analyzed in Canada for their content of radium-226. The maximum value was 466.6 Bq/kg.

Two old male otters have been analyzed in Finland. The first otter died in February 1986 and a cesium-137 content of 250 Bq/kg was found. The other died in August 1986: cesium-137 content 1250 Bq/kg (Skarén 1988a). An old female otter has been analyzed in October 1987 and 85 Bq/kg were found (Skarén 1988b).

In Great Britain otter scats were measured for radiation with a maximum value of 79 500 Bq/kg (dry weight) after the Chernobyl explosion (Mason & Macdonald 1988).

Our analyzed contents are much lower than all other reported before.

An explanation for this might be the low radiation found in fish from Austria. Because freshwater fish is consumed by the Austrian population only a very small extent, other food has been measured preferentially by the Austrian authorities. Therefore only limited data on fish are available. Fish from Austrian otter habitats show levels lower than 245 Bq/kg fresh weight (Schonhofer 1989) compared with an average value of 9800 Bq/kg fresh weight in Sweden (Hakanson et al 1989). Saxen reported average values from 1400 Bq/kg to 6600 Bq/kg fresh weight for different species in Central Finland (Saxen & Rantavaara 1987). All these data are from 1986. Skarén (1988a) concluded that the Chernobyl explosion had few acute effects on otters in Finland although almost nothing is known about the risks of low level contamination by radiation in otters. Although only few samples were analyzed in Austria, the otters seem to be unaffected by the cesium-137 fallout.

ACKNOWLEDGEMENTS -We thank Mr W.D. Rausch and Mr E Leidinger for their comments on a preliminary draft of this paper.

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