

Search for Strontium-90 in Deciduous Teeth*

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As a result of the Fukushima nuclear catastrophe huge amounts of radioactivity were released into the environment. While the Japanese authorities made much of the contamination by radioactive iodine and cesium and while these radioisotopes are measured regularly in samples of soil, water and foodstuffs, the radioactive strontium contamination of humans and the environment is hushed up.

Contamination maps do not exist ; at best, strontium measurements are carried out sporadically by individual research groups. Furthermore, strontium is not at all looked for in the foodstuffs-database, which is used to calculate the radiation exposure of the population through taking in contaminated food. But it is known that relevant amounts of radioactive strontium were found in the teeth and bones of livestock in Fukushima. *1)

Therefore, independent scientists in Japan have set themselves the objective of investigating the radioactive strontium exposure of the population. The aim is to draw attention to the hitherto ignored risks of leukemia and forms of bone cancer posed to the inhabitants in the contaminated areas. This is particularly relevant in the case of children who are at a significantly higher risk of becoming diseased than adults.

In future years deciduous teeth are expected to be collected throughout Japan in order to measure the levels of strontium within them. It is important that not only the children from the especially contaminated areas, but also that people from all age groups from across Japan donate their deciduous teeth, so that the analyses can discern chronological and regional differences. The survey data could then be used as biomarkers to assess the total strontium exposure of individual populations and age groups.

Furthermore, along with donating deciduous teeth, donors will provide information on their nutrition and drinking water during infancy (breast milk or powdered milk, bottled mineral water or tap/well-water), as well as their place of birth and residential history. It is known from past studies that nutrition composition during the first year of infancy can have a significant impact on the strontium contamination of the body. This factor is also to be investigated in Japan so that, if necessary, relevant recommendations for infants can be made.

As the detection of strontium in teeth is technically complex and very work-intensive, the initiators of the study sought international expertise from the Basel Cantonal Laboratory, Switzerland, which is well versed in the methodology of strontium detection. At present 200 deciduous teeth from Japan are being examined in Basel. As it is intended for the surveys to be conducted in Japan, the

establishment of a suitable laboratory there and the training of staff are pre-requisite to this endeavour. The research team is confident that in the end, however, the research results will justify the effort, and plans are for the surveys to be performed over several decades in order to document the temporal change of the strontium exposure of the population. Strontium has a physical half-life of 28.8 years.

The aim of the study is to determine the true extent of the strontium contamination and to give recommendations to the affected municipalities and prefectures in order to protect the health of the affected children. The IPPNW Germany endorses this Japanese deciduous teeth study and has joined the ' Preserving Deciduous Teeth Network ', a promoters' network, to aid the start-up of the study programme. *2) First results are expected to become available in a few years, but the scientists are asking for patience. At the age of six to 12 years most of the baby teeth fall out, so that strontium exposure can be measured only with multi-year latency.

The fact that this important investigation is not conducted by official bodies, but by independent scientists, says a lot about the political environment in Japan, where state institutions at all levels are under extraordinary influence of the nuclear industry and are pressured by superior authority to shelve the Fukushima dossier as soon as possible. The work of the scientists of the PDTN is highly valuable in that good science is used to put pressure on the authorities not to abandon the people in the contaminated areas to their fate.

(English Translation: Rie Groeger)

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References

*The original article is entitled 'Suche nach Strontium-90 in Milchzähnen' and appears [here](#) on the IPPNW Germany homepage

*1) Sr-90 and Cs-137 Concentrations in Cattle's Teeth and Bones in the Evacuation Zone of FNPP http://pdn311.town-web.net/english/sample/img/graph/ushi_big.pdf

*2) Preserving Deciduous Teeth Network (PDTN) Homepage: <http://pdn311.town-web.net/english/>