**Letter to the editors of the Journal of Epidemiology**

Dear editors.

Shimura et al. state in the abstract of their article:
A Comprehensive Review of the Progress and Evaluation of the Thyroid Ultrasound Examination Program, the Fukushima Health Management Survey.
J Epidemiol 2022, 32 (Suppl 12), S23:
*"… our results suggested that the increased incidence of childhood thyroid cancer in Fukushima Prefecture was not caused by radiation exposure, but rather by the highly sensitive detection method."*

Considering a mean sensitivity of Ultrasound-guided Fine Needle Aspiration Biopsy (US-FNAB) of thyroid nodules to detect malignant tumors of 82,9% (1) it will take two screening rounds until about 97% of all preexisting thyroid malignancies will have been detected. Only after this double screening, newly US-detected cancers most likely represent newly developed ones. After that, increasing incidences in US-detected thyroid cancers represent a real incidence of newly developed ones and are no longer to be explained by the screening method itself that apparently continues to be applied. This was the case in the Fukushima prefecture after 2011. The high incidence (in the US & FNAB-investigated population), observed in 2013 and 2015 (2) most likely was mainly caused by the detection of preexisting, clinically not yet apparent thyroid cancers. Due to the known latency period of 2-3 years for solid malignant tumors after radiation exposure (3), only in 2015 and 2017 newly developed cancers may have been part of the US-detected ones. Yet, the high incidence in 2017 and later most likely represent only newly developed tumors and the increasing incidence in 2019 and 2022 (2, 4, 5) significant increases (Poisson regression analysis: p=0.0306). As in 2017, 2019 and 2022 the same screening method had been applied, it is extremely unlikely that the method itself is responsible for this second increase. It is thus much more likely that the increased radiation exposure of the population in the Fukushima prefecture after 2011 is responsible for this significant second rise in incidence of thyroid cancer in children and young adults (figure 1).

A similar increase in incidence of thyroid neoplasms, as now observed in the Fukushima prefecture after 2017 has been demonstrated in the Ukraine and in Belarus after the Chernobyl accident in 1986 (6). As a screening of thyroids had not been performed at this time, the initial very high incidence of neoplasms, as currently documented around Fukushima between 2013 and 2015, has not been observed (2).

According the UNSCEAR report 2000 (7), the childhood thyroid gland is one of the most radiosensitive organs. Age at exposure is the strongest modifier of risk. Among survivors of the atomic bombings, the most pronounced risk of thyroid cancer was found among those, exposed before the age of 10 years, and the highest risk was seen 15-29 years after exposure.

In 2021 A. Körblein found a significant dose-dependency of thyroid cancer incidence in persons <=18 years in the Fukushima prefecture in the second round of screening (8).

It is thus more likely and plausible that the well documented second increase in thyroid-incorporated radioactivity (Iodine 131) in persons living near the Fukushima plant is responsible for the increased number of thyroid cancers in this population, at least after 2017. Radioactivity causes chromosomal aberrations in affected cells that induce malignant tumors. All thyroid cancers reveal these aberrations (9).

Physicians should not deceive the public on the scientifically most likely and plausible cause of the observed increase of thyroid cancer incidence in Japan after the Fukushima accident in 2011.

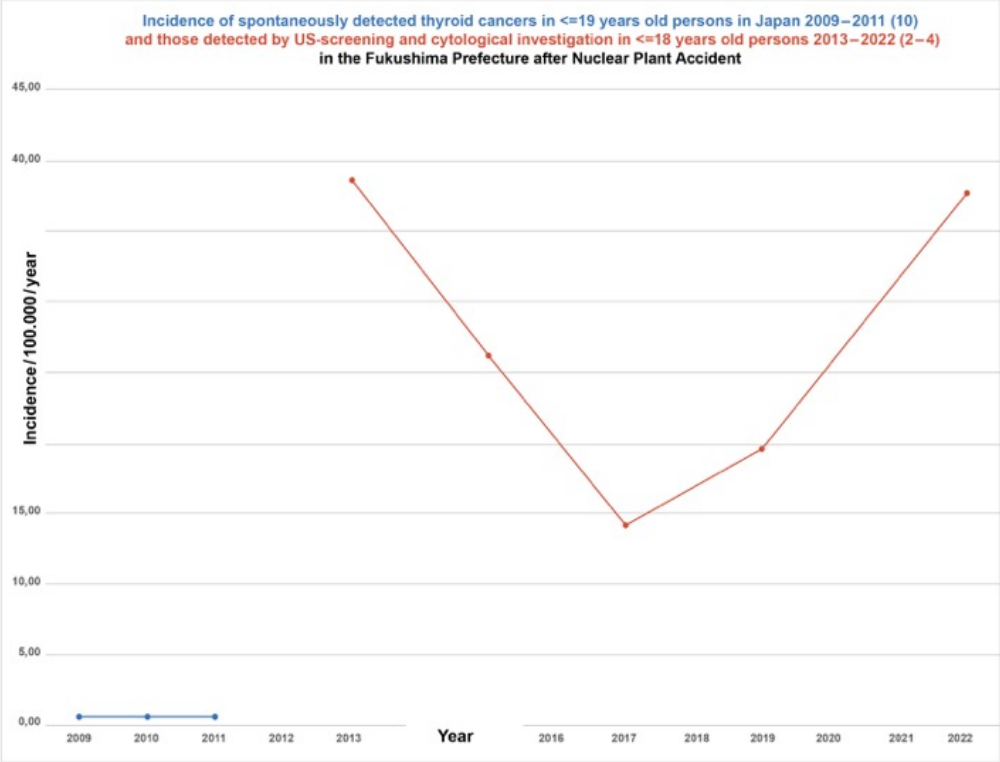


Figure 1

Prof. Dr. med. Alfred Böcking, pathologist, Berlin
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Dr. med. Volker Siller, pediatrist, Aachen
Dr. med. Jörg Schmid, psychiatrist, Stuttgart
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