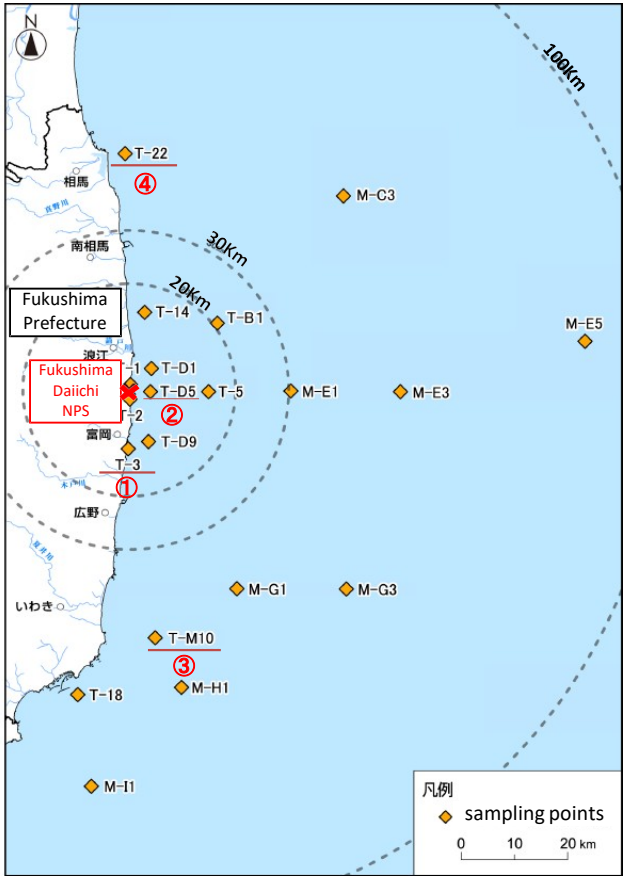
Status of water environment around the TEPCO's Fukushima Daiichi Nuclear Power Station and the impact to the marine fish

July 2019

Fisheries Agency of Japan

Trend of radioactive caesium in seawater

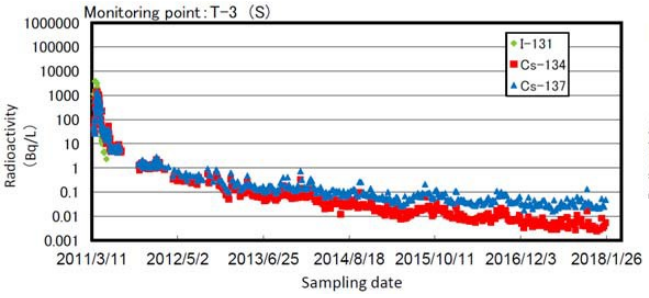
- Concentrations of radioactive caesium in seawater off the TEPCO's Fukushima Daiichi Nuclear Power Station drastically decreased in a few years after the accident and remain low and stable for many years.



Seawater sampling points

～20Km from Fukushima Daiichi NPS

①



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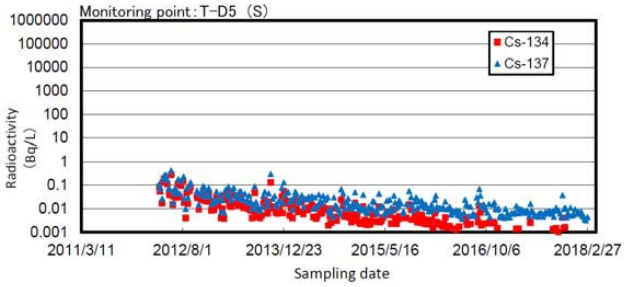
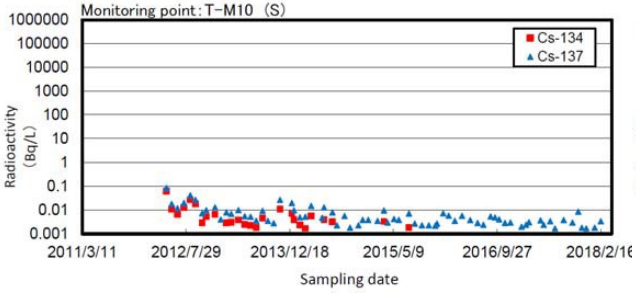


30～100Km from Fukushima Daiichi NPS

③



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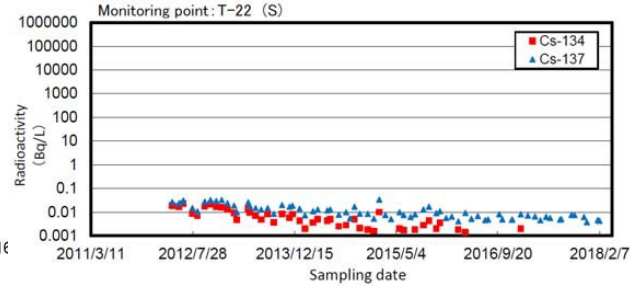
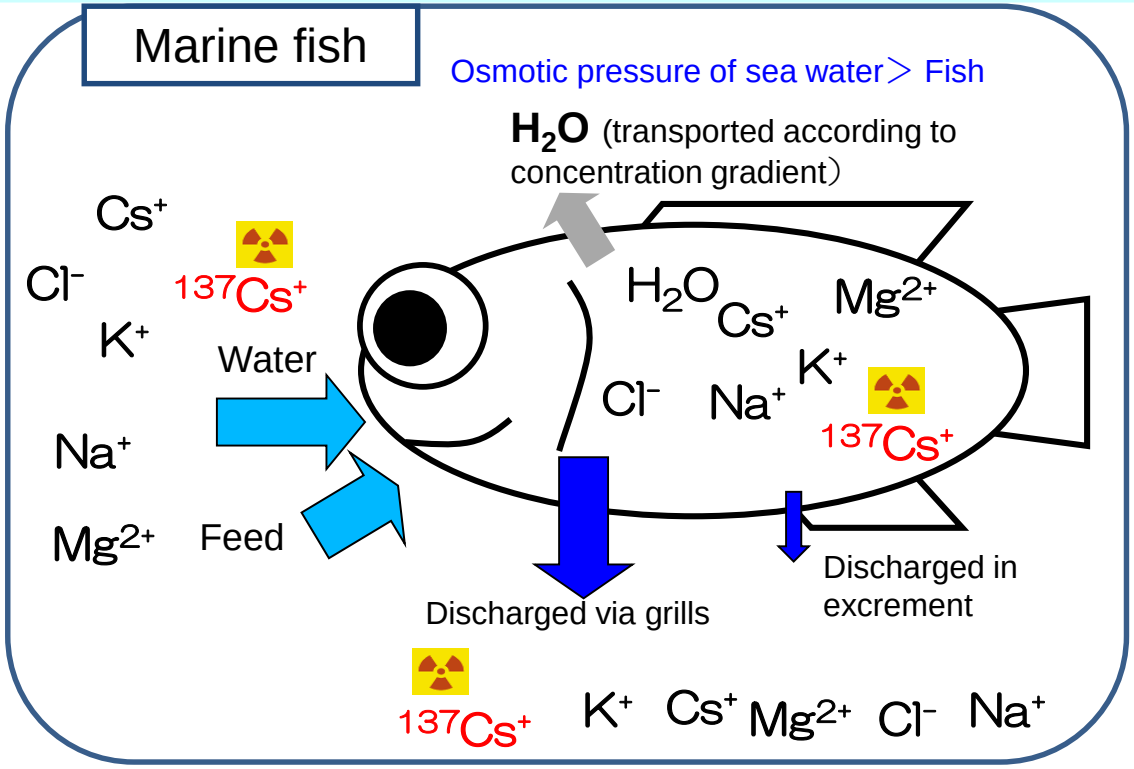


(Source : NRA website)
https://radioactivity.nsr.go.jp/en/contents/8000/7742/24/engan.pdf

Mechanism of intake and discharge of radioactive caesium by fish

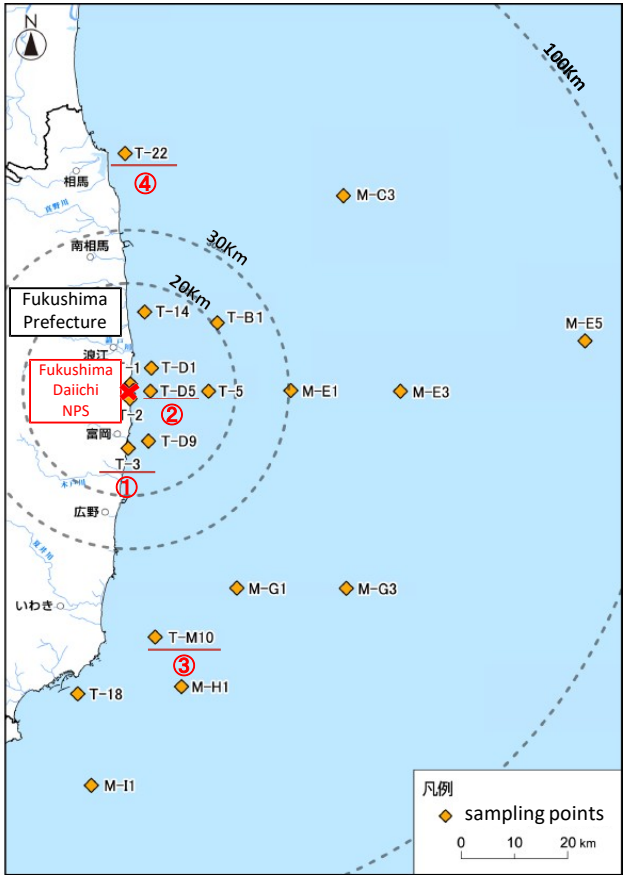
- Radioactive caesium is excreted from the bodies of marine fish together with other minerals, since their bodies function to excrete the absorbed minerals promptly. It has been said that about half of the radioactive caesium in fish is excreted in 50 days if the fish is living in the environment where radioactive caesium does not exist, and it is well-known that if the concentration of radioactive caesium in seawater decreases, the concentration of radioactive caesium in fish also decreases gradually.



Reference：Fundamental physiology of fish, Edit. K. Aida, published in 2002

Trend of radioactive caesium in sea-bottom soil

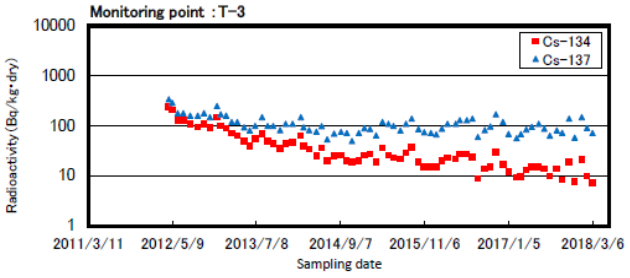
- Concentrations of radioactive caesium in sea-bottom soil off TEPCO's Fukushima Daiichi Nuclear Power Station show a static or decreasing trend.
- It is known that clay in the soil absorbs and traps the caesium in water †.



Sea-bottom soil sampling points

～20Km from Fukushima Daiichi NPS

①



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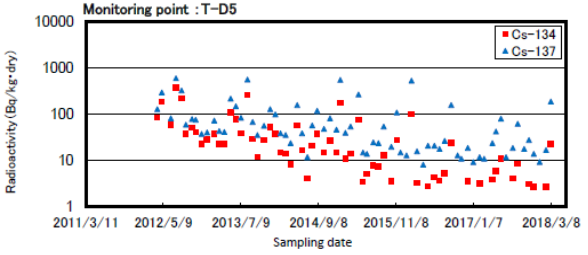

30～100Km from Fukushima Daiichi NPS

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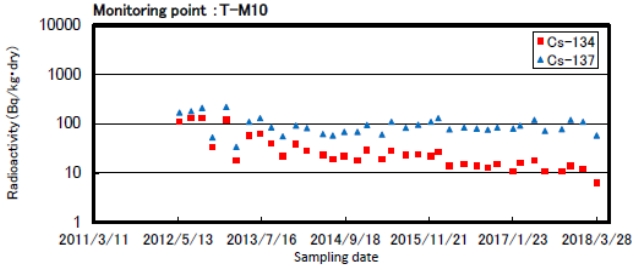

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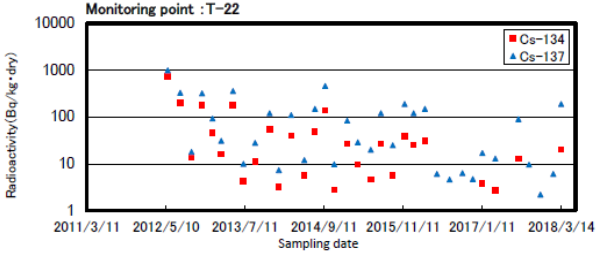


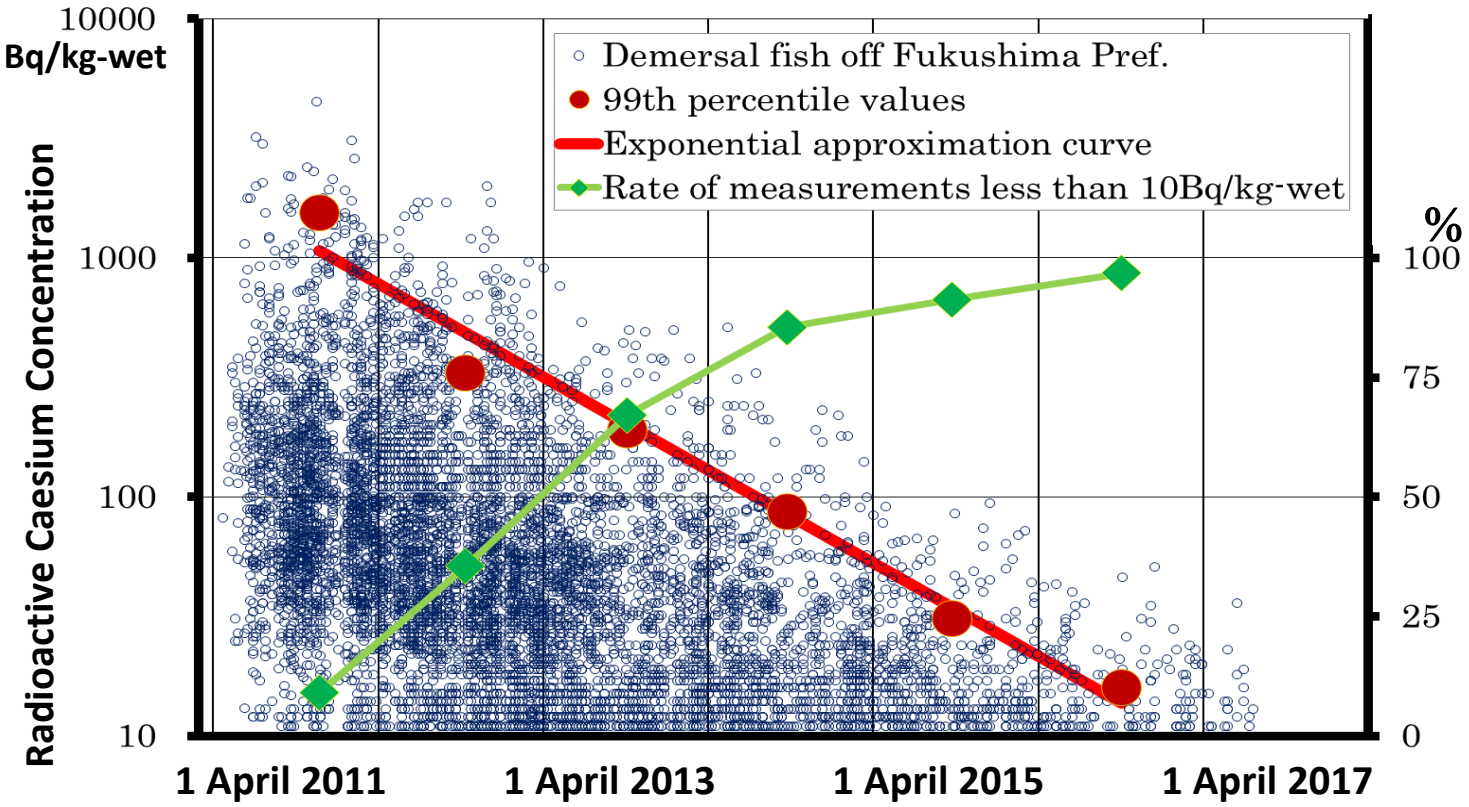
(Source : NRA website)
https://radioactivity.nsr.go.jp/en/contents/8000/7747/24/engan_soil.pdf

† Reference: Collective Structural Changes in Vermiculite Clay Suspensions Induced by Cesium Ions, *Scientific Reports No. 4* on October 10, 2014

Note: Physical half lives are about 30 years for ^{137}Cs(▲) and about 2 years for ^{134}Cs(●).

Radioactive caesium in demersal fish off Fukushima prefecture

- It is thought that the amount of radioactive caesium in demersal fish decreases gradually due to the dispersal and dilution of radioactive caesium in the seawater and since clay in marine soil absorbs and traps the radioactive caesium in water.
- The results of monitoring actually show that concentrations of radioactive caesium in demersal fish caught off Fukushima prefecture are steadily falling.



The radioactive caesium in soil has no significant effect to fish!

Data :Fisheries Agency http://www.jfa.maff.go.jp/e/inspection/index.html