

IV Actions to Promote Timber Use

Many of the areas on which the Fukushima Dai-ichi Nuclear Power Plant Accident dropped radioactive substances are occupied by forests, and forestry and timber production are affected by those radioactive substances. The Forestry Agency is gathering accurate information about timber contaminations while building a system to allow the supply of safe timber products etc. to consumers.

Building Systems to Supply Safe Timber Products etc.

In efforts to ensure safety, timber produced in Fukushima Prefecture is felled and moved according to the “Guidelines for Felling and Moving Trees From Private Forests of Fukushima Prefecture (enacted on December 17, 2014)” by Fukushima Prefecture, and standards for the safe shipment of timber products are set in “Voluntary Management Standard Limit for Radiation Levels in Timber Products (enacted on July 27, 2012) by the Fukushima Prefecture Federation of Timber Cooperatives.

In addition, the Forestry Agency works to provide consumers with safe timber products etc. by performing continuous investigation and analysis (monitoring) of radioactive substances in timber products and working environments etc., for all processes from intake of raw lumber to shipment of timber products. The Agency has

installed radioactive substance measurement instruments in raw lumber markets, sawmills, and chip factories, and provides outreach and education to prevent negative reputation impact. These and other measures provide support towards the establishment of a safety certification system for timber products etc. (Figure 1).

In Fukushima Prefecture, surface dose levels on finished timber products in factories finishing and shipping materials produced in the prefecture have been investigated at regular intervals (once in three months) since 2011. A survey conducted in June 2018 found that when three or more samples were taken of each product type, such as columns, beams, and boards, from all 127 factories preparing and shipping Fukushima-grown materials, the highest value of surface radiation level (unit cpm*1) was 44 cpm (equivalent to 0.001 μ Sv/h*2) (Figure 2) When this measured value was checked by an expert in radiological protection, their assessment was that it would have no impact on health or the environment.

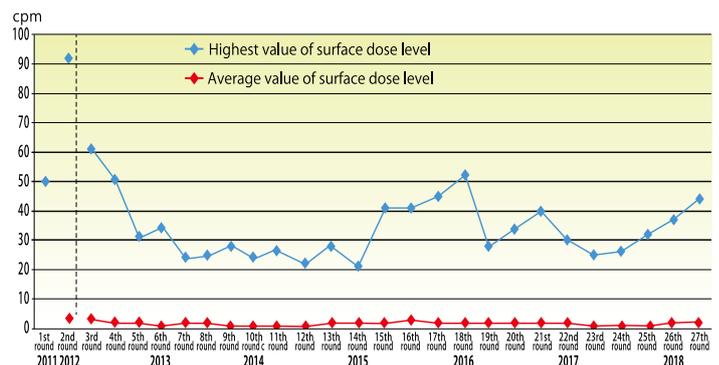
※1 cpm: Short for counts per minute, which is the value displayed on a Geiger counter or other radiation meter.

※2 For reference, the air dose in Fukushima City before the disaster (on 2010.2.16) was 0.04 μ Sv/h, while the air dose in Shinjuku ward, Tokyo (on April 2 2018) was 0.0376 μ Sv/h.



[Figure 1] Development of an Inspection System for Raw Timber and Timber Products

Reference : Forestry Agency “Survey and Validation Project for Impacts on Distribution of Safe Timber Products etc.” (FY2018)



[Figure 2] Surface Dose Levels of Timber Products

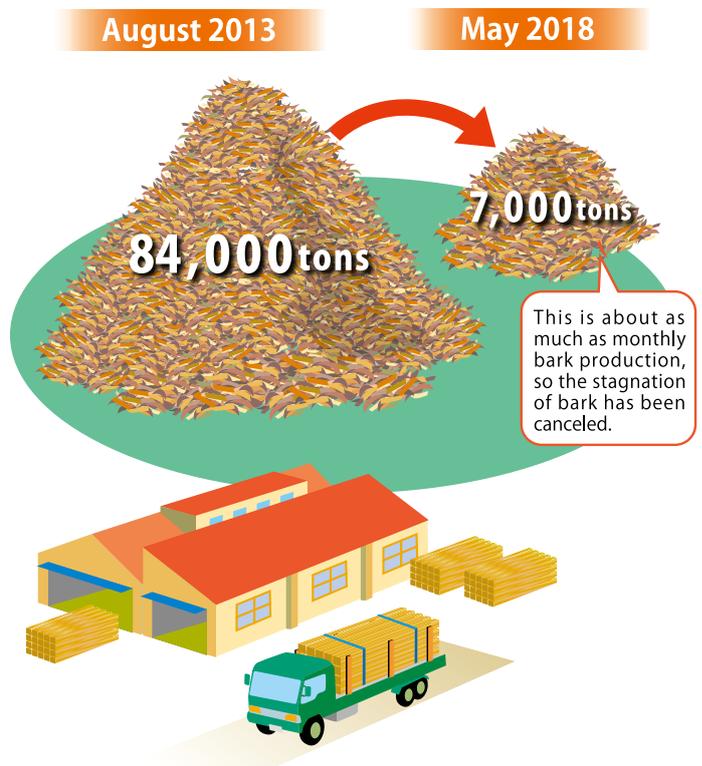
Reference : Fukushima Prefecture “Results of a Survey of Radiation Levels of Timber Lumber Products from Fukushima Prefecture”

Measures to Process Bark Residues in Lumber Factories etc.

Bark, which is a by-product of timber processing has been put to effective use as fuel for boilers, compost, bedding for livestock, and other uses. However, after the Fukushima Daiichi reactor accident, there were reports of cases of burning waste wood, including bark, producing ash containing radioactive cesium at high concentrations. Since then, there has been no progress in the use of bark. That has left bark building up in sawmills and elsewhere.

Stagnated bark reduces the amount of logs that can be accepted, so in 2013 the Forestry Agency, aiming to stabilize the distribution of forestry products in the region, started providing subsidies for the costs of incinerating and temporarily storing bark at waste disposal sites, and for temporary storage costs. As a result, the amount of stagnated bark has declined from a peak of 84,000 tons in August 2013 to 7,000 tons in May 2018, removing the buildup (Figure).

Also, the incineration and disposal of bed logs for mushroom production etc. that had been rendered unusable by the effects of radioactive cesium was not making progress, so the Forestry Agency is paying expenses for their temporary storage etc. Radioactive cesium concentrations at incinerators have been measured since FY2015, to confirm safety while the disposal of bed logs progresses.



[Figure] Promoting the Processing of Stagnated Bark

Reference: Forestry Agency (2018) "Disposal Assistance Project for Forestry Products Damaged by Radioactive Substances"

Approximate Calculation of Exposure Dose of Radiation in an Occupied Room Surrounded by Timber

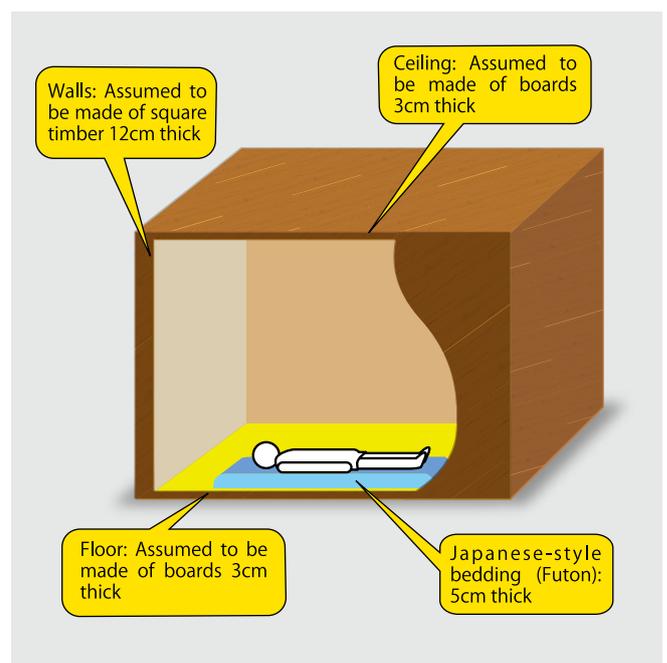
If someone lived in a room surrounded by timber containing radioactive material, what would be the effects on their body?

In Fukushima Prefecture, the output of materials from forests with air dose rates exceeding $0.5 \mu\text{Sv/h}$ is restricted, in order to smoothly process bark generated by timber processing etc.

A survey by Fukushima Prefecture of 81 locations in the prefecture in FY2017 found that the average reading from timber at 55 locations with air dose rates not exceeding $0.5 \mu\text{Sv/h}$ was 49 Bq/kg.

If the timber products (*1) from which the highest radioactive cesium concentrations were detected in that survey were used to build all six planes of a house (ceiling, walls, floor), the additional exposure dose was estimated at $0.007 \mu\text{Sv/h}$, for an annual dose of 0.048 mSv (*2). These values are extremely small, even compared to 2.1 mSv, which is the annual exposure dose from natural radiation.

Given the above, it appears that even living in a wooden home using timber produced in Fukushima Prefecture would have almost no impact on the environment or on health.



[Figure] Assumption of Living Room Surrounded by Timber Used in Trial Calculation

[Note] In an ordinary Japanese wooden house (timber framework house), the amount of timber used is considerably smaller than in this calculation, so the exposure dose can also be expected to be much lower.

Reference: Fukushima Prefecture (2017) "Status and Forecast of Radioactive Substances in Forests"

*1 2,000 Bq/kg (collected from a survey area adjacent to a difficult-to-return area)

*2 Approximate calculation based on the Forestry Agency document "Approximate Calculation of Exposure in an Occupied Room Surrounded by Timber, IAEA - TEC-DOC - 1376"