

HU-ACE NEWS LETTER

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Activities of the Core

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| Jan.20,2020 | The 81st Hiroshima University Biomass Evening Seminar (co-organization) |
| Jan.23,2020 | The 41st HU-ACE Steering Committee Meeting |
| Jan.30,2020 | Prof. Nishida presented in the program "Okonomi Wide Hiroshima" on the NHK Hiroshima. |

We are proceeding a rural demonstration project of NEDO with Kita-Hiroshima Town

Kita-Hiroshima Town, Hiroshima Prefecture, is famous for the rape flower project where biodiesel is produced and utilized. Hiroshima University and Kita-Hiroshima signed the overall collaboration agreement long before HU-ACE was established, and on-site projects and technical investigation on biodiesel production has been conducted. This time, rural independent system demonstration project on bioenergy of New Energy and Industrial Technology Development Organization

(NEDO) that we proposed aiming at further introduction of biomass in Kita-Hiroshima Town was approved. Finalization of the contract took time, but actual activities were started last December, Ms. Furukawa joined as researcher, and Committee on Biomass Utilization was held on Jan. 31. System for the efficient utilization of biomass based on its generation in the area will be investigated.



Biodiesel production unit in Kita-Hiroshima City



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Research Topics

Fukushima Nuclear Plant Accident and Effects of radiation exposure

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Research fields: Quantum Energy Applications, Radiation Biological Physics,

Keywords: Radiation measurements, Microdosimetry, Dose evaluations, Environmental radiations



Abstract

Background

On Mar.11,2011, Fukushima Daiichi Nuclear Power Plant accident; reactor core meltdown and release of radioactive materials occurred due to Great East Japan Earthquake. From early stage of the accident, our lab. took part in studies for contamination around Fukushima area and various dose evaluations for soil, plant, wild animals and so on.

Research theme

Up to now, our lab. has made studies on applications of radiation for medical and engineering fields. After the Fukushima nuclear accident on March 2011, we have started and continued contamination studies around Fukushima area and the related dose evaluations. The studies widely cover areas such as measurements of fallout radioactivities, transfer coefficients from soil to rice plants, dose estimation of β rays from fallout radioactivities, hot particles released from the accident and dose evaluation on wild Japanese macaques and so on.

Results

Contamination data of soils taken around Fukushima soon after the accident [1] contributed to evacuation of residents. Transfer coefficients of rice planting in Minami-Soma soon after the accident on May,2011 are valuable data for early stage of the radioactivity fallout [2]. β -ray dose map for fallout radioactivities around Fukushima [3] is the only thing for β -ray exposure estimation. The map is useful for dose estimation of tiny biota and skin dose of animals. Recently, we estimate radiation exposures for wild Japanese macaques living around Fukushima area [4]. This study is related to low dose rate irradiation effects for the primates simulated of human. These studies contribute to dosimetry technique for radiation disaster and effects of radiation exposure studies.

References

- [1] S. Endo, et al., Measurement of soil contamination by radionuclides due to Fukushima Daiichi Nuclear Power Plant accident and associated cumulative external dose estimation, *J. Environm. Radioact.* 111, 18-27, 2012.
- [2] S. Endo, et al., Paddy-field contamination with ^{134}Cs and ^{137}Cs due to Fukushima Dai-ichi Nuclear Power Plant accident and soil-to-rice transfer coefficients, *J Environm Radioact.* 116, 59-64,2013.
- [3] S. Endo, et al., Mapping of cumulative β -ray dose on ground surface around Fukushima area, *J. Radiat. Res.* 56, i48-i55,2015.
- [4] S. Endo, et al., Dose Estimation of External and Internal Exposure in Japanese Macaques After the Fukushima Nuclear Power Plant Accident., *Low-Dose Radiation Effects on Animals and Ecosystems*, Manabu Fukumoto Edt, <https://doi.org/10.1007/978-981-13-8218-5>, ISBN 978-981-13-8217-8, ISBN 978-981-13-8218-5 (eBook), 179-191, 2019.

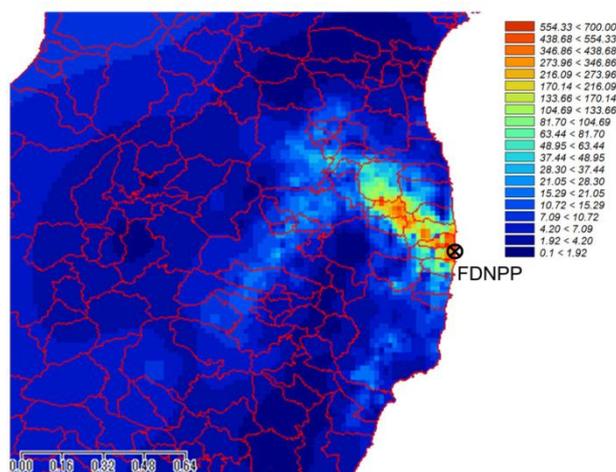


Fig. 1. Map of the cumulative β -ray dose (mSv) on ground surface in the first year after deposition.