

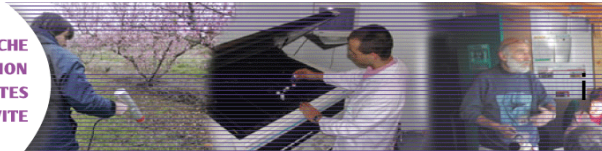
Remarks on the situation of nuclear power plants in France (problems of safety, control and transparency, question of extending the lifetime of the reactors)

Nuclear Energy Conference, LINZ, May 8th 2019

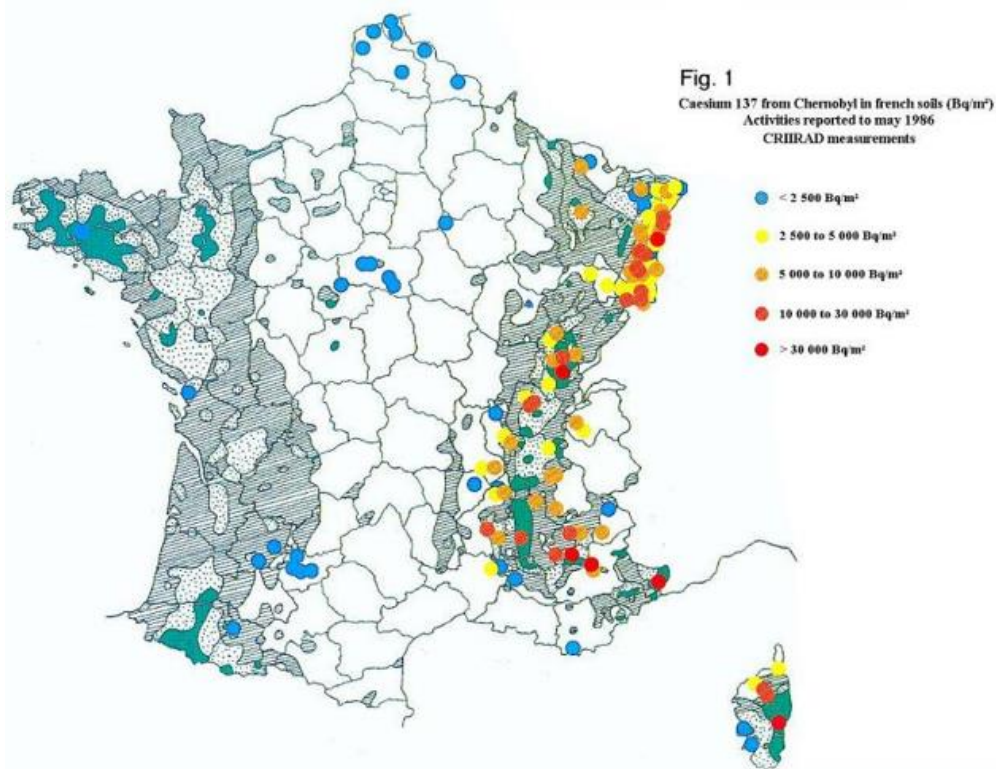
Bruno Chareyron,
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Head of the CRIIRAD laboratory (Commission de Recherche et
d'Information Indépendantes sur la RADioactivité)

2016 Nuclear-Free Future Education Award

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1986 : Chernobyl fallout in France : the lies of the authorities



May 6th 1986 : The French Government wrote that France had « received no radioactive fallout from Chernobyl »

But CRIIRAD showed that Chernobyl radioactive fallout on the French territory induced doses to the thyroid gland above health limits for young people living in the most affected areas.





Prolonging the operating times of NPP above 40 years : the opinion of the citizens is required while the deadlines are already exceeded

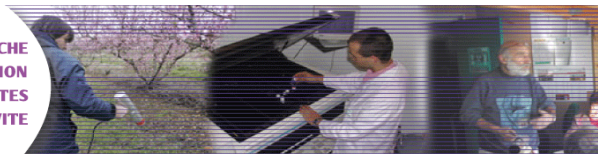
According to the French Nuclear Safety Authority (ASN) "*during their construction, the nuclear reactors were designed for a period of 40 years*"

But how to guarantee the mastery of the aging of materials and circuits after 40 years of exploitation?

The planned dates for the examinations of each reactor by EDF range from 2020 to 2031

ASN announced that it would formulate, **at the end of 2020**, its general requirements for improvements to be made to all 32 reactors concerned.

Before its publication, ASN indicates that the project will be subject to public consultation



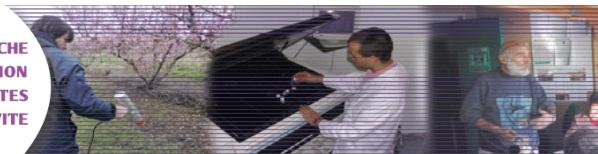


ASN will then proceed to the instruction of the individual files of each reactor and decide whether the reactor can continue to operate and what work is to be undertaken.

At the end of **2018**, **four reactors** have **already passed the 40-year mark** (Fessenheim 1 and 2 ; Bugey 2 and 3)

In **2021**, when the guidelines for the work to be carried out on the 32 reactors will be given, **14** of them will **have already reached 40 years** ... and all the instruction of the individual cases will remain to be done.

If we take into account a 5-6 month shutdown of the reactor to carry out the in-depth checks, the 6 months usually required by EDF for the preparation of its report, the time required by ASN and other experts to carry out verifications, and the time allotted to the consultations and the public inquiries, it is possible to count approximately **2 years** between the beginning of the EDF checks and the publication of the prescriptions by the ASN.





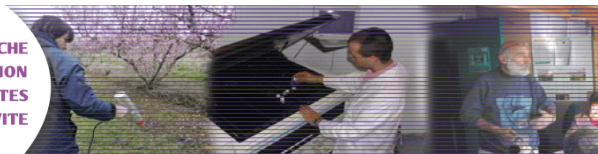
Therefore, starting from the dates published by EDF for decennial shutdowns, when the **900 MWe reactors** will know if they can continue to work and what work they must undergo for this, they will have an **average of 44.7 years**.

Eleven reactors will be **over 45 years** old.

Cruas 2 and Bugey 3 will be around **48 years old**.

ASN states that EDF will then have "several years" for the implementation of its requirements, ie a new minimum period of 2 years before full compliance.

Meanwhile "**the reactor can continue to operate**"



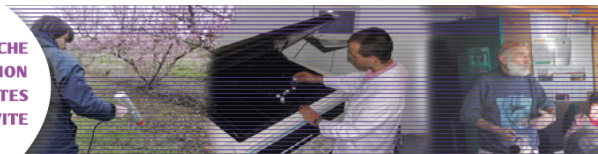


Assuming that all the upgrade work is completed after 2.5 years, CRIIRAD has calculated the age that the reactors would have once fulfilled all the conditions supposed to guarantee their operation beyond 40 years.

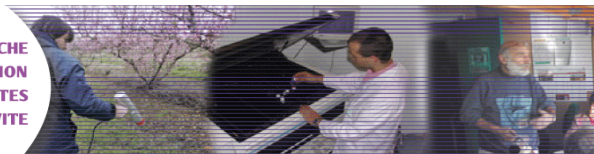
The result is that they will be **47 years** old on **average**.

Two reactors (Bugey 3 and Cruas 2) will even **exceed 50 years!**

Considering all of the 900 MWe reactors, the total number of years of operation beyond 40 years without upgrades **could exceed 200 reactor years**.



Réacteurs 900 MWe	Début de construction	Date de divergence	Age fin 2018	Anniversaire des 40 ans	Date début examen EDF	Age lors de l' autorisation ASN	Age à la fin des travaux
BLAYAIS-1	01/1977	05/1981	37,6	05/2021	03/2022	42,9	45,4
BLAYAIS-2	01/1977	06/1982	36,5	06/2022	03/2024	43,8	46,3
BLAYAIS-3	04/1978	07/1983	35,4	07/2023	03/2026	44,7	47,2
BLAYAIS-4	04/1978	05/1983	35,7	04/2023	03/2026	44,9	47,4
BUGEY-2	11/1972	04/1978	40,7	04/2018	03/2021	44,9	47,4
BUGEY-3	09/1973	08/1978	40,4	08/2018	03/2024	47,6	50,1
BUGEY-4	06/1974	02/1979	39,9	02/2019	03/2021	44,1	46,6
BUGEY-5	07/1974	07/1979	39,5	07/2019	03/2022	44,7	47,2
CHINON-B1	03/1977	10/1982	36,2	10/2022	03/2024	43,4	45,9
CHINON-B2	03/1977	09/1983	35,3	09/2023	03/2026	44,5	47
CHINON-B3	10/1980	09/1986	32,3	09/2026	03/2030	45,5	48
CHINON-B4	02/1981	10/1987	31,2	10/2027	03/2031	45,5	48
CRUAS-1	04/1978	04/1983	35,8	03/2023	03/2026	45	47,5
CRUAS-2	11/1978	08/1984	34,4	07/2024	03/2030	47,7	50,2
CRUAS-3	04/1979	04/1984	34,8	03/2024	03/2025	43	45,5
CRUAS-4	10/1979	10/1984	34,3	09/2024	03/2026	43,5	46
DAMPIERRE-1	02/1975	03/1980	38,8	03/2020	03/2022	44	46,5
DAMPIERRE-2	04/1975	12/1980	38,1	11/2020	03/2022	43,3	45,8
DAMPIERRE-3	09/1975	01/1981	38,0	01/2021	03/2024	45,2	47,7
DAMPIERRE-4	12/1975	08/1981	37,4	07/2021	03/2025	45,7	48,2



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GRAVELINES-4	04/1976	05/1981	37,6	05/2021	03/2024	44,8	47,3
GRAVELINES-5	10/1979	08/1984	34,4	07/2024	03/2026	43,7	46,2
GRAVELINES-6	10/1979	07/1985	33,5	07/2025	03/2030	46,7	49,2
ST. LAURENT-B1	05/1976	01/1981	38,0	12/2020	03/2025	46,2	48,7
ST. LAURENT-B2	07/1976	05/1981	37,7	05/2021	03/2024	44,9	47,4
TRICASTIN-1	11/1974	02/1980	38,9	02/2020	03/2020	42,1	44,6
TRICASTIN-2	12/1974	07/1980	38,5	07/2020	03/2021	42,7	45,2
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TRICASTIN-4	05/1975	05/1981	37,6	05/2021	03/2025	45,8	48,3
FESSENHEIM-1	09/1971	03/1977	41,8	02/2017	Date max arrêt : sept. 2020, soit 43,6 ans		
FESSENHEIM-2	02/1972	06/1977	41,5	06/2017	Date max arrêt : août 2022, soit 45,2 ans.		





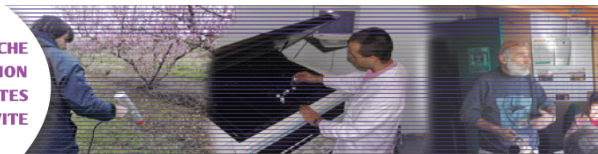
Meanwhile, the risks of a nuclear accident will increase on an aging fleet of reactors

The French authorities recognize that the nuclear catastrophe is possible in France.

The government has set a reference of dose (not even a limit) of **100 milliSieverts** for the population for the management of **the release phase** in the event of an accident, a value 100 times greater than the maximum annual allowable dose normally used (1 milliSievert per year)

For the **management of contaminated territories** after the fallout phase, the French government has retained a value of **20 millisieverts** per year, which, according to ICRP risk factors, represents a cancer risk level of **340 cases per 100 000 people** exposed.

Note : Many independent scientists believe that these factors are largely underestimated



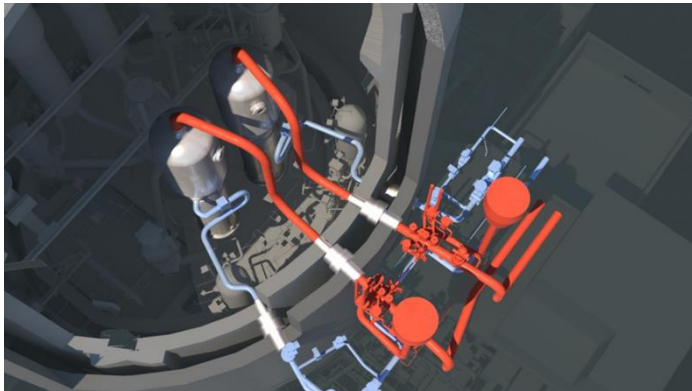
The situation of nuclear safety in France is very worrying: defects of the welds of the Flamanville EPR

Dozens of welds of the secondary circuit of the EPR currently under construction at Flamanville should have been made with a very high quality to comply with the **exclusion of rupture** criteria. It has not been the case.

EDF has forgotten to communicate to its subcontractors the information according to which these parts were subject to the very demanding standard of exclusion from rupture.

The investigation carried out by CRIIRAD showed that this abnormal situation involves also **ASN (French Nuclear Safety Authority) which did not impose** on the body mandated to **check the quality** of the welds that it integrates the verification of conformity with respect to the exclusion of rupture.

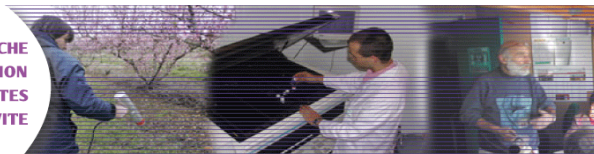
More information http://www.criirad.org/installations-nucl/EPR%20Flamanville/probleme_de_soudure/Soudures_EPR_Flamanville-dec.2018.pdf





8 of the welds to be repaired are located at the crossings of the containment structure and EDF requires permission not to make the repairs

These serious defects regarding the exclusion from rupture criteria and other defects regarding basic safety requirements will add additional delay to the EPR construction. The current cost of **10.9 billion Euros** is already 3 times higher than the initial cost announced.





The situation of nuclear safety in France is very worrying: falsification of quality documents concerning vital parts for nuclear safety

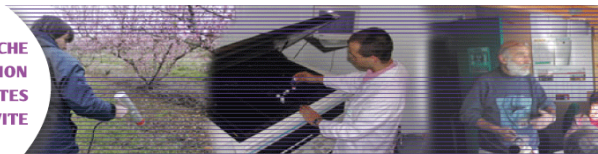
Steel parts manufactured at the Creusot-Forge (AREVA) plant were used in nuclear reactors although they did not meet the technical specifications.

This concerns also the bottom and closure head of the Reactor Pressure Vessel of the EPR (carbon content). ASN has authorized EDF to leave the bottom in place and change the closure head after a few years of operation !

It turns out that many quality records of other parts had non-conformities and in some cases were **falsified**. Some of them are actual in operating NPP. This situation shows that the system of control of the Nuclear Safety is defective and cannot be trusted.

Read the file (in French) on the CRIIRAD website

<http://www.criirad.org/installations-nucl/EPR%20Flamanville/EPR%20Flamanville.html>





The control system for nuclear facilities must be thoroughly reviewed

It is essential to completely review the safety control organization of nuclear installations because it is impossible to know the real state of the reactors.

The control system is based too much on the **operators' declarations** and **presupposes their good faith.**

ASN does not have the capacity to carry out extensive and comprehensive checks.

The financial and organizational difficulties of AREVA (ORANO) and EDF, the aging of the nuclear fleet, and the loss of operator skills create a situation in which nuclear safety can not be guaranteed.



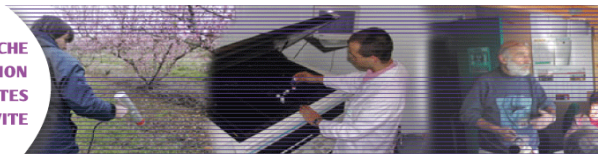


The public participation in decision-making must be thoroughly reviewed

The system of public participation in decision-making processes needs to be reviewed (CIGEO, Flamanville, management of radioactive waste).

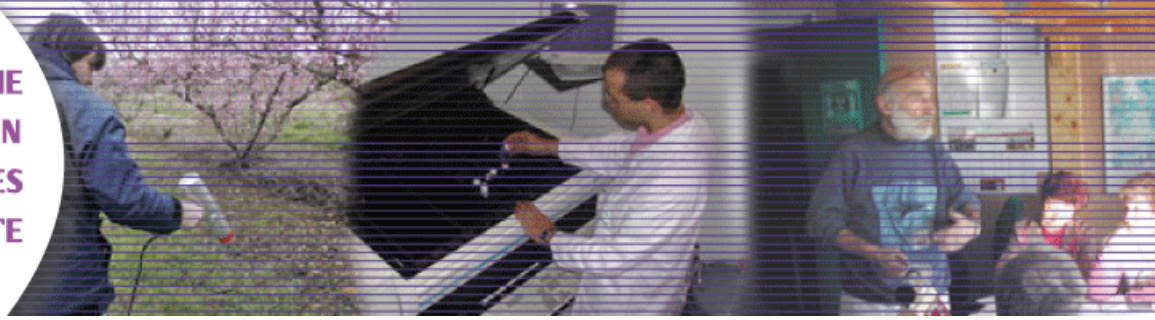
The authorities use participating associations as guarantors in the decision-making processes and so-called participation of the "stakeholders" but do not provide the means for a **real independent control**

The nuclear disaster management system is now **designed to make people pay for the sanitary and economic price of the disaster**. The system of compensation is of the order of **1.5 billion Euros** and remains derisory in front of the real cost of a major nuclear accident which amounts to **hundreds of billions of Euros**.





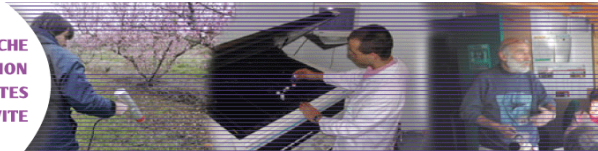
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Thank you !



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LINZ, NEC, May 8 2019 VF

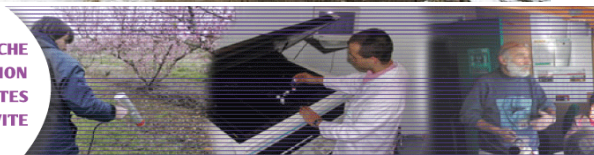


Impact of Uranium mining in France

Radioactivity of uranium ore ([Video](#))

Radioactivity of waste rocks (Parking of a ski resort) ([video](#), Bois Noirs)

Radioactivity of sediments-soil contaminated by liquid effluents ([Video](#), Bellezane, Limousin)



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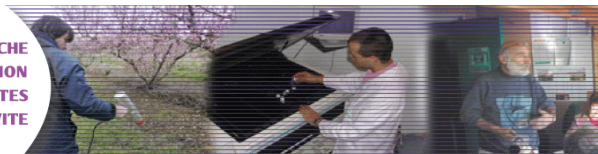
Uranium mining in Niger (AREVA) / cooperation with a local NGO : AGHIRIN'MAN

2003 : CRIIRAD discovers that radioactive scrap is sold in the market in ARLIT city.

[Video](#)

Houses and roads have been built with radioactive material from the mine.

About 50 million tons of radioactive tailings are lying in the open air a few kilometers away from the city.



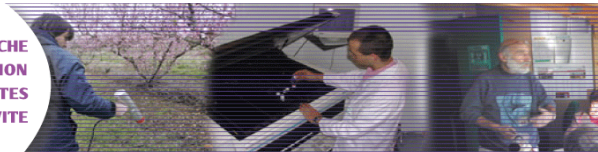


AREVA Uranium conversion plant (France, Malvesi)



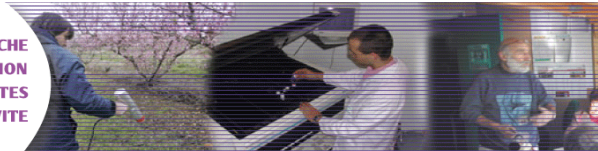
This Engineer from AREVA says to a journalist that the metal from the drums is stopping the radiation emitted by the uranium concentrate packed in the drum. This is a lie.

Year 2006 : On request of a family that was living besides an AREVA uranium conversion plants CRIIRAD showed that the radiation from the drums was exposing people more than 200 meters away from the fence and that mud contaminated with uranium and plutonium had been leaking after a failure of a dam in 2004 . AREVA had to relocate the family. [New video 2014](#)



The transportation of radioactive material

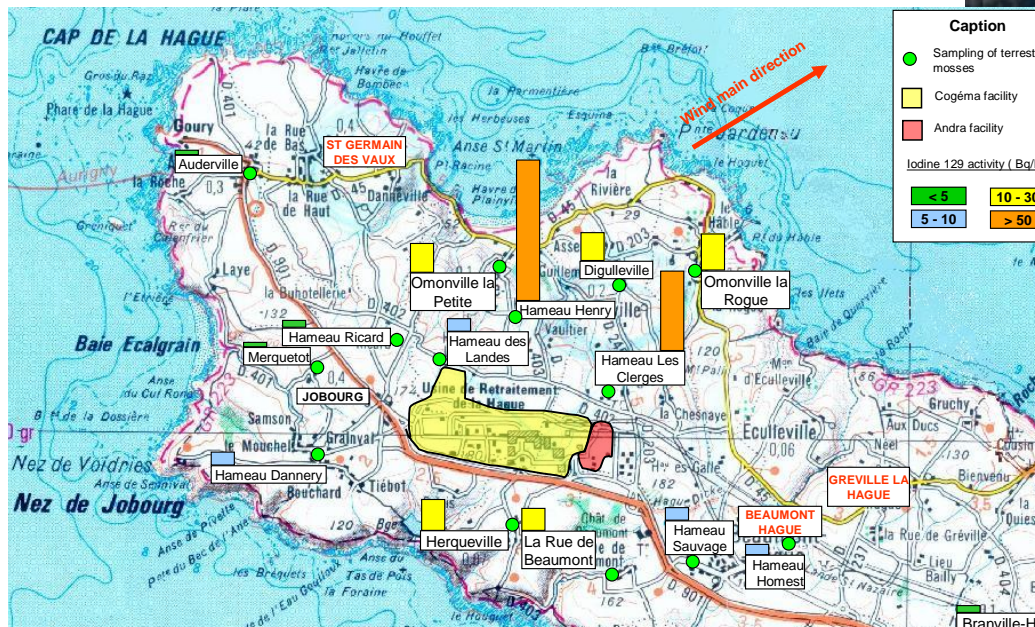
Gamma radiations are so powerful that they irradiate people even dozens of meters away from the trucks and trains transporting radioactive waste or material. The international rules enable a dose rate 20,000 times above normal on contact of the vehicles. [Video UF4 truck](#)



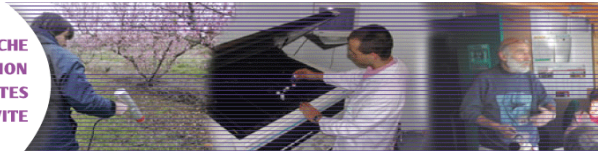


Radioactive Effluents from Reprocessing plants : COGEMA-AREVA at La Hague (France)

1997 : At low tide, the level of radiation near the discharge pipe of COGEMA-AREVA reprocessing plant was 3 000 times above normal. The company had to forbid public access to the beach and decontaminate the pipe.



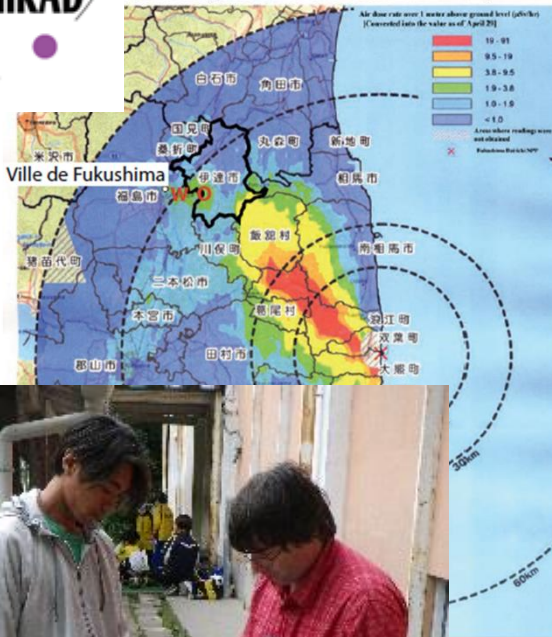
1994 : Contamination of terrestrial mosses by radioactive Iodine 129 (Half life = 15.7 million years) due to the atmospheric discharges of radioactive substances by La Hague reprocessing plant. The public living near the plant is breathing a contaminated air.



Fukushima (Japan) / cooperation with citizens Video



Results of an indoor monitoring by WELIX and LAPOL dose monitoring inside 80km zone of Fukushima Dai-ichi NPP



Mission CRIIRAD au Japon / mai-Juin 2011



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