

ACRO

Association
pour le Contrôle
de la Radioactivité dans
l'Ouest

Independent monitoring of
environment

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Activity Report 2003



Presentation

ACRO ("Association pour le Contrôle de la Radioactivité dans l'Ouest") is a French non governmental organisation that operates a laboratory for radioactivity analysis. It was created in 1986 as a response to people's demands for information and reliable, independent testing.

The organisation mainly carries out missions of information and training for its correspondents and more generally for a wide audience, particularly for people who worry about problems of environment, health, management of radioactive waste and emissions.

Thanks to its structure, it enables citizens to involve themselves together with scientists so as to gain access to information that was hitherto reserved to specialists.

The organisation can vouchsafe its independence from the diversity of its members and volunteers, as well as from the diversity of its money resources.

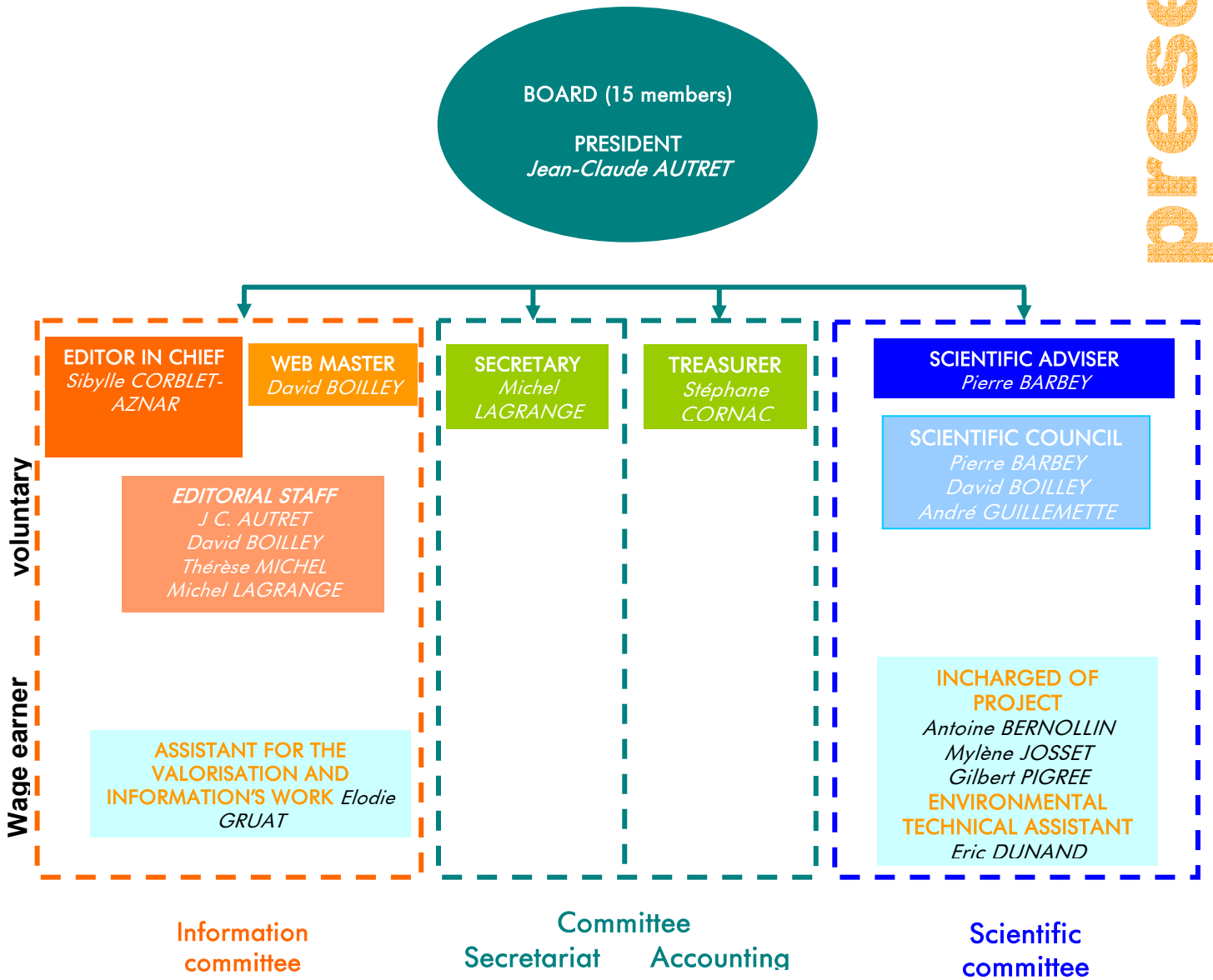
Besides its headquarters situated on the city of Caen area (Normandy), three branches situated in North Normandy, in Touraine and North Cotentin enable ACRO to assert its presence in the west of the French country.

The association is run by a 30-plus team of volunteers and employees, structured in four committees : science, information, secretarial offices and management.

Certified for the Protection of the Environment, the association was granted a technical qualification certificate for its testing and measurement activities by the French Health Authorities, according to decree n° 88 715 of May 9, 1988.

In connection with all the human and technical know-how that it has links up over the years, the ACRO has developed such expertise as has made it an essential player in public debate; it has also led it to take part in numerous work groups and official committees

Organization chart



Mission 1: Information

Informing the public is a basic action of the ACRO. This is meant to enable the common run of mankind to get involved with scientists in order to get access to the sort of information hitherto reserved to specialists.

The ACRO missions of information are mainly structured round three themes: publications, internet and meetings with the public.

The ACRO makes its greatest effort to increase the technical information available on line, via internet, and in its publications "the Nuclear Chronicle of the ACRO", "the Notebooks of the ACRO" and the "letters to the members".

1.1 Publications

L'ACRONIQUE du Nucléaire (The Nuclear Chronicle): a regular information

"The nuclear chronicle", a quarterly periodical of forty pages, aims to inform regularly about the stakes of the nuclear energy, be they either social, medical, economic, technical or (and) environmental. Each periodical is structured round a popularized document, a column "life of the association", results of control or (and) observation, a technical sheet on radioactivity and a press review.

The writing of the articles is entrusted to a team of voluntaries and the layout is made by a salaried employee. The elaboration of every issue is realized with a constant care for attractive and clear contents.

For the years 2003, four issues have been published.



"The Notebooks" of the ACRO

To meet more and more in depth enquiries related to current events and therefore needing fast answers, the ACRO achieves thematic reports of a few pages. These ones come within the continuity policy of

the quarterly issue and aim to deal with the subject as exhaustively as possible, while remaining within the reach of everyone, as the concerned public is generally none specialized.

"The bulletin": letter to the members

This one-page leaflet, created in July 2002, enables us to let our members know about the life of the association, to answer current events questions and to develop a chosen them. This publication also intends to be a

place to exchange ideas, opinions and suggestions between the association members and voluntaries.

1.2 Internet

The ACRO internet site, brought into service in 1999, has, at first; enable the association to have its activity and services better known.

However the access to information had yet to be furthered. The ACRO, in 2003, has then decided to make an effort on the increase of the documentation available on line (articles and studies), of the French speaking links which are concerned with laboratories of independent analyses, "citizen" associations, information centres, academic sites, learned societies, official sites, operators and affiliated members, and so on ...

The site also offers partial translation in English and recently in Japanese. In fact, the association has noticed, through

different contacts, an information enquiry from Asia, resulting from the existence of nuclear plants, in particular in Japan.

Now, the site offers about a hundred pages to be consulted on line; about thirty pages have been added to the site, during the year. The recent set up of a search engine makes easier the access to documents on line.

At last, it is now possible for the web users to subscribe to a letter of information of the association; at the end of 2003, we can count about sixty subscribers.

1.3 Specialized documentation centre

In order to make easier the access to a specialized documentation and to enable anyone to draw up a file quickly on a given theme, the ACRO has directed its efforts, as soon as 1998 towards the creation of a specialized centre of documentation.

At the moment the "D.C.S." puts at the public's disposal information of an official nature (legal texts, rules of conduct), scientific publications, specialized press articles and press files.

This year also, many students and individuals have applied to our documentary centre, within the framework of their work (thesis, bibliographical studies, or of enquiries of specific information (legal text, environmental data).

The ACRO has started to think about putting on line the resources in a data base form, thus making the access easier and faster.

1.4 Public events, meetings and symposiums

Every year, the ACRO answers different appeals from local and national association members who wish both to be informed and be trained, and also, from institution workers within the framework of a given mission.

For the year 2003 this involvement was expressed by a strong participation in

symposiums and specialized congresses where the associative point of view was required, as well as in many work groups and meeting within the institutional and associative frame work.

1.5 Taking part in local commissions of information

Taking part in local commissions of information (CLI)

For several years, the ACRO has been a member of diverse local commissions of information (CLI).

- The commission of observation of the Manche centre of storage
- The "CLI" of the Paluel and Penly nuclear plants
- The special and standing committee of information with the Hague (CSPI).

These ones aim to inform the public about the nuclear activities of their region and the possible impacts on health and environment.

Taking part in the meetings of the Higher Council of the nuclear information and security.

The higher council of nuclear information and security, founded by decree in 1987, represents for the ministers in charge of environment and industry, a consultative committee of high level the mission of which extends to all the questions related to nuclear security and information of the public and media. This council gathers key figures from very varied circles.

Since 1999, Pierre Barbey, the scientific adviser of the ACRO has been appointed as a member of the nuclear security and information and acts as the association representative within the Council. This year, he has taken part in the five programmed meetings, either to study questions about current events, or to deal with methods of organization and the running of the council.

1.6 Training

The applications for training or for a pedagogical intervening have been growing more and more numerous every year. The association tries to meet them, to the best of its abilities, as those applications require a human investment the association cannot always bear.

Since 2002, the ACRO has set up an educational project round the theme "Environment and citizenship", in a partnership with the junior High School, Albert Jacquard of Caen.

This action fits in the High School programme of pedagogical innovation. This project enables the pupils of one form to discover at first the work of a laboratory of analyses, then, to get involved with the ACRO scientists in each one of the stages related to the monitoring of environment. This process, based on a specific action (the analysis of samples taken by the pupils themselves), besides the introduction of the technical and scientific aspects, allows an awareness of the complex problems of environment and its protection.



Mission 2: Monitoring of the environment

2.1 Monitoring of the environment of the nuclear plants

The monitoring of the levels of radioactivity round the nuclear plants in the west of France is the second fundamental mission of the ACRO. The levels of radioactivity are regularly measured in different areas (water, sediments,) sampled in the earthly and aquatic environments, near the monitored nuclear plants.

This work enables to assess the impact of the nuclear plants on the natural environment and by so doing to prevent the possible risks of pollutions.

All the results are published in a periodical document which answers a local enquiry for a kind of information more extensive

than the one issued by the operators and the regular inspection authorities.

Each programmes of monitoring is carried out in collaboration with the local ACRO sub-branches, entirely composed of voluntaries.

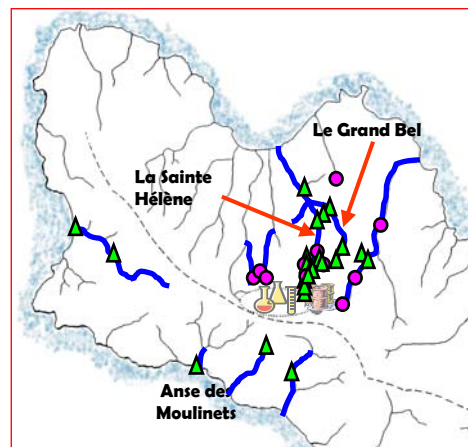
At last, for the last few years, studies or specific observations have been carried out, thanks to special funds obtained from institutional agencies, added thus to the association specific resources.

The achieved studies aim to improve the knowledge of the conditions of dispersion and of the spatiotemporal evolutions of radioactivity.

Two environments are subjected to a regular follow through:

- **The Hague plateau** (in La Manche county, Basse Normandie) where the nuclear reprocessing plant of COGEMA la Hague and the "Manche center of storage" (covering an area of 12 hectares with 526.000 m³ of nuclear waste piled up) are established.

The programme of monitoring, led in collaboration with the sub-branch "ACRO Cotentin", entirely made up of voluntaries, affects the continental aquatic environment (monthly sampling).

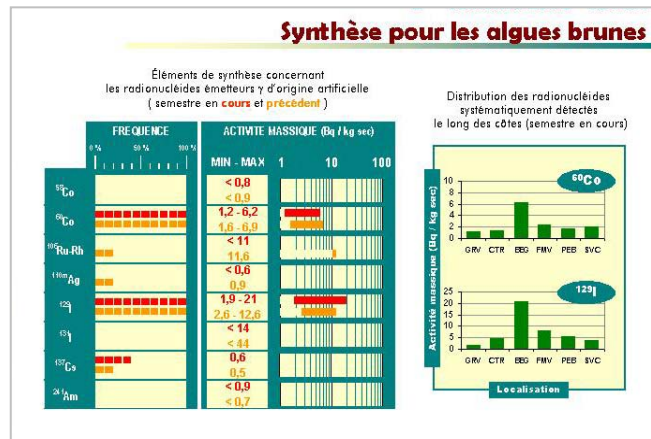


- **The Touraine region** (Indre et Loire division) where, along the Loire, the nuclear plant of Chinon is set up, it is composed of 4 nuclear pressurized reactors of 900 MWe each. The programme of monitoring, led in collaboration with the « ACRO Touraine » sub-branch, entirely made up of voluntaries, affects the earthly and aquatic environment (yearly sampling).

2.2 Radio ecological follow through of the aquatic environment both continental and marine of the sea-coast of Normandy

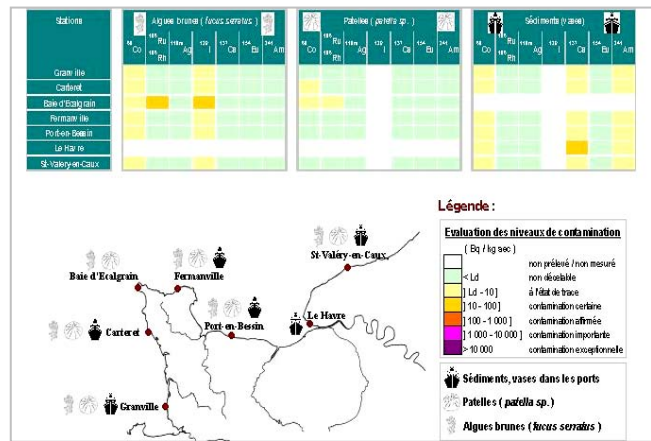
On request of the Seine Normandy Water Agency (AESN), the ACRO has started, in March 2001, a radio ecological follow through of the quality of continental and marine waters of the sea-coast of Normandy.

This work follows "the study of the radio ecological marine and continental waters of the coast of Normandy", realized in 1997-1998 on behalf of the AESN and used as a reference as much for the interpretation of the levels in time and place as for the choice of the observation places, particularly in the marine environment where it is expected to



precise the longitudinal distribution of the main

With the prospect of providing an evaluation representative of the radio ecological condition, the follow through is structured round two campaigns of taking samples during the past year: one in Spring and Summer, the other in Autumn Winter. In that manner, it is possible to take into account the season variations linked to the biological cycle of the species and the possible modifications of the waste. This follow through is led on a period of 3 years: 2001-2003.



2.3 Radio ecological monitoring of the environment of the Cogema la Hague building site in the Moulinets cove.

This monitoring, set up as soon as 1999, thanks to the grant of a financial support from the CSPI (Special and Permanent committee of Information about the Hague plants) aimed at assessing the possible repercussions on the environment, of the site of reshaping the current pipe of the discharge into the sea of the liquid effluents of the Cogema plant. The whole work of monitoring, achieved by the ACRO and all the results of the controls have been given an enhanced value, in view of large information of the public.

Since 2001, the ACRO has been carrying on its monitoring within the framework of a new building site, which now concerns the

dismantling of the old pipe of the discharge into the sea of the liquid effluents of the Cogema la Hague plant. It completes the regulations monitoring set up by the Cogema and by the Agency of the protection of the ionizing radiations (OPRI). During the year, monthly samplings have been taken in the public zone of the



Moulinets cove.

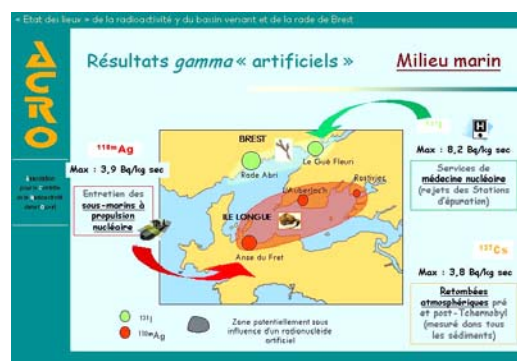
2.4 Inventory of the radioactivity of the catchment's area and the Brest Harbour.

This study, ordered by the urban Committee of Brest, takes place within the framework of the Bay Contract, set up in 1992, in order to acquire the information needed for the management and the restoration of the waters of the Brest Harbour and its catchments area.

The ACRO work was then to provide a "model" of the levels of radioactivity (natural and artificial) on the scale of the catchments area at a precise moment.

These results are structured around only one campaign of sampling "in situ", achieved in March 2003, which has concerned various environmental indicators, biological (brown algae, mollusc, aquatic moss) and inert (sediments and sludge) know for their aptitude to

concentrate the pollutant elements found in water. Thus the 2.600 km² of the catchments area (marine and freshwater environment) have been studied through about fifteen sites, in order to take into account all the anthropogenic activities, either those using the natural environment (leisure, fishing) or those likely to bring along radionuclides. Each sample has been analysed afterwards by gamma spectrometry.



2.5 Radiological measures of the earthly environment of the establishment of the GIP CYCÉRON in Caen – year 2003

The public interest group CYCÉRON (a centre of cerebral neuro-imaging and neuroscience research) ha appealed to the ACRO in July 2003 to characterize the radiological level of the CYCÉRON campus, and that, within the framework of an agreement application from the DRIRE, to exploit the site, regarding the classified facilities for the protection of the environment, concerning the buildings extension..

This radiological appraisal has been achieved in order to take into account the main activity of the site, namely, the use of a cyclotron for the production of radio elements which the emission of gaseous

radioactive effluents is linked to, during its normal functioning.

To do it, two kinds of studies had to be realized at the same time.

The first one concerned the research of radionuclide, gamma emitters, found in the environment of the site, by means of samplings of earthly and atmospheric bio-indicators (grass, maize, pine needles and earth) analyzed, afterwards, in gamma spectrometry.

The second one consisted in the checking, outside the buildings, of the exposure due to two different radiations: gamma and neutron radiations, both of them caused by the general functioning of the installations.

Mission 3: "Citizen" expertise

3.1: Taking part in working groups and institutional committees

For example, ACRO takes part in the followed commissions:

Working group for radio protection

The national regulations of all the countries and those of the European community are inspired by the recommendations of the International committee of radiological protection (CIPR).

To prepare its future recommendations, the CIPR has wished to enquire about the advice and suggestions of the countries inspired by its proposals.

In France, the French society of radioprotection (SFRP) has been appointed, in 1999, to set up a working group intending to feed the CIPR thought. It is, in the frame of mind that the SFRP has appealed to the participation of the ACRO scientific adviser.

Radium committee

The creation of a committee named "radium" has been decided, within the framework of a radium fund, set up by the government, to help the landlords of sites contaminated by the radium industry and to carry out restoration works on site.

To meet the request of the Board of Prevention of Pollutions and risk of the department of ecology and sustainable development, an ACRO representative is taking part in this committee, the mission of which is the awarding of grant rates in view of restorations.

Concertation around the industrial sites

At last, the ACRO scientific adviser has been requested to take part in the preparatory meeting to create a working group "concertation around the industrial sites", by the Institute of radioprotection and nuclear security.

Mission 4: Radioprotection

Measurement of radon

Since 1999, the ACRO has carried off the measure of radon concentration inside the houses. The chosen system uses a passive sampling and a measure in a delayed mode (electret detector; E.Perm system of Rad. Elec. Inc.). This measure method is in accordance with the norm NF M60-766.



In 2003, the ACRO has carried off many measurements, on request of individuals or communities. Analyses have thus been achieved in various public assembly buildings, on requests of the mayors of the villages, or Heads of establishments.

Mission 5: Waste and Environment

5.1: Control of the effluents discharge by hospitals

The town of Caen has decided to set up regular controls on the liquid discharge of the hospitals in the urban area of Caen. These controls are achieved within the frameworks of conventions signed between the town, the owner of the network of water treatment and the establishment likely to discharge radioactive elements.

The controls have started in September 2001 and are carried through, on request of the town, by the ACRO, every term. The results of the measures are handed over to the concerned establishments and to the community department of health and hygiene.

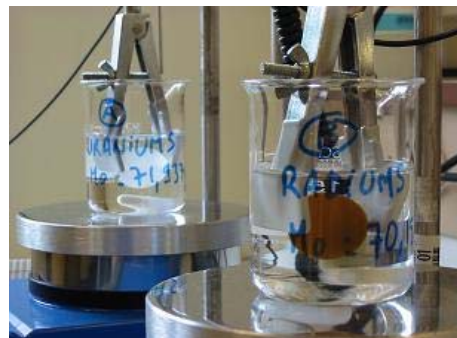
5.2: Radiological characterization of DIS and technical aid in relation to the directive 96/29 Euratom

For more than 6 years, the laboratory has been regularly requested to carry out analyses of radioactivity on various special industrial wastes (DIS). Quite often the application for a radiological characterization follows the activating of the radiation portal monitor alarm, put at the entrance of the centre of technical burying.

As in previous years, the ACRO offers its means and skills to the industrialists who wish for a radiological characterization of their DIS.

As a complement of the analysis, a technical assistance is going to be proposed to those same industrialists, to exploit the results, regarding the directive 96/29 Euratom which is used as a guide text by the DRIRE to decide how the waste is to be disposed of.

The aid does not only concern the regulations, but it is often accompanied by information and training about radioactivity in a general way and radioprotection.



Mission 6: Nuclear Metrology

6.1: Campaign of yearly empowerment evaluation



The ACRO, aware of the need to guarantee the quality of the measures realized within the laboratory, has undertaken various procedures, since the beginning of its activity of analysis.

Now, the laboratory owns a technical qualification, in accordance with the clauses of the decree n°88-715 of may 9th 1998 relating to the harmonization of the measures of radioactivity in the environment and the foodstuffs.



Year	Organisation	Determination(s) proposed	RA determined	Success
1991	ACRO / LDA / COGEMA (organised by CSPI)	^{137}Cs , ^{60}Co et ^{40}K	^{137}Cs , ^{60}Co et ^{40}K	Y
1997	OPRI (63 SH 300)	^{137}Cs , ^{40}K et ^3H	^{137}Cs , ^{40}K et ^3H	Y
1998	OPRI (64 L 300)	^{90}Sr , ^{40}K , ^{137}Cs and others radionuclides to identified	^{90}Sr , ^{40}K , ^{137}Cs , ^{54}Mn et $^{110\text{m}}\text{Ag}$	Y
1999	OPRI (65 SR 300)	^{40}K , ^{210}Pb , ^{226}Ra , ^{228}Ra , ^{234}U , ^{235}U , ^{238}U , ^{228}Th , ^{230}Th , ^{232}Th .	^{40}K , ^{210}Pb , ^{226}Ra , ^{228}Ra , ^{235}U , ^{238}U , ^{228}Th et ^{230}Th .	N
2000	OPRI (66 SH 300)	^3H , whole beta and whole alpha	^3H	Y
2001	OPRI (67 L 300)	^{40}K et 4 r artificial radio nuclides β - γ to identified et quantified	^{40}K , ^{134}Cs , ^{137}Cs , ^{51}Cr et ^{129}I	Y
2003	IRSN (71 SH 300)	^3H et ^{90}Sr	^3H ^{90}Sr	Y N
2003	ACRO / LASEM (French Marine - Brest)	artificial and natural gamma	artificial and natural gamma	Y