



Environmental Monitoring of the radioactivity in France

How it is measured and reported in a reference web
site

*The National network of measurement of the
radioactivity in the environment (RNM)*

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- Objectives and actors of the environmental monitoring : the french model
- Environmental monitoring in France
 - Monitoring around nuclear installations
 - Monitoring carried out by IRSN
- The National network of measurements of the radioactivity in the environment (RNM)
 - Context and objectives
 - Demonstration

⑤ Provide information to the public

TRANSPARENCY

① Contribute to the radiological environmental knowledge

**KNOWLEDGE
EXPERTISE**



④ Control the sources of radiological releases and their compliance with the authorized limits

CONTROL

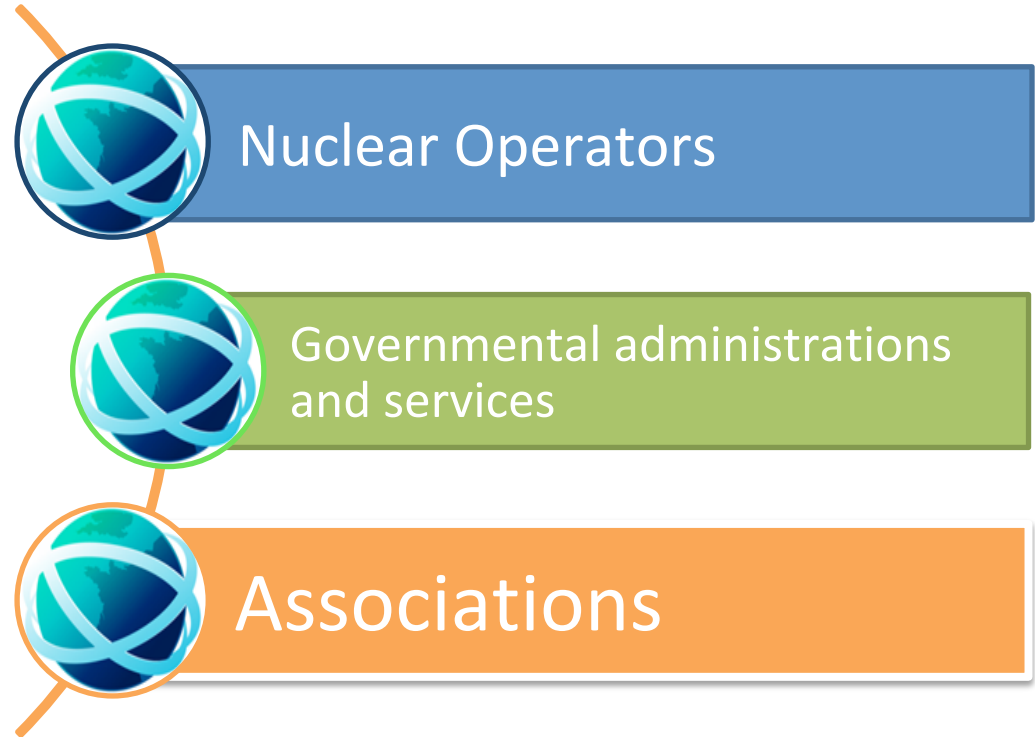
③ Detect as far as possible any increase of the environmental radiation conditions and give an ALERT

EARLY ALERT

② Provide information to enable the assessment of doses resulting from authorized nuclear activities

PROTECTION

ACTORS of the monitoring of the radioactivity in the environment



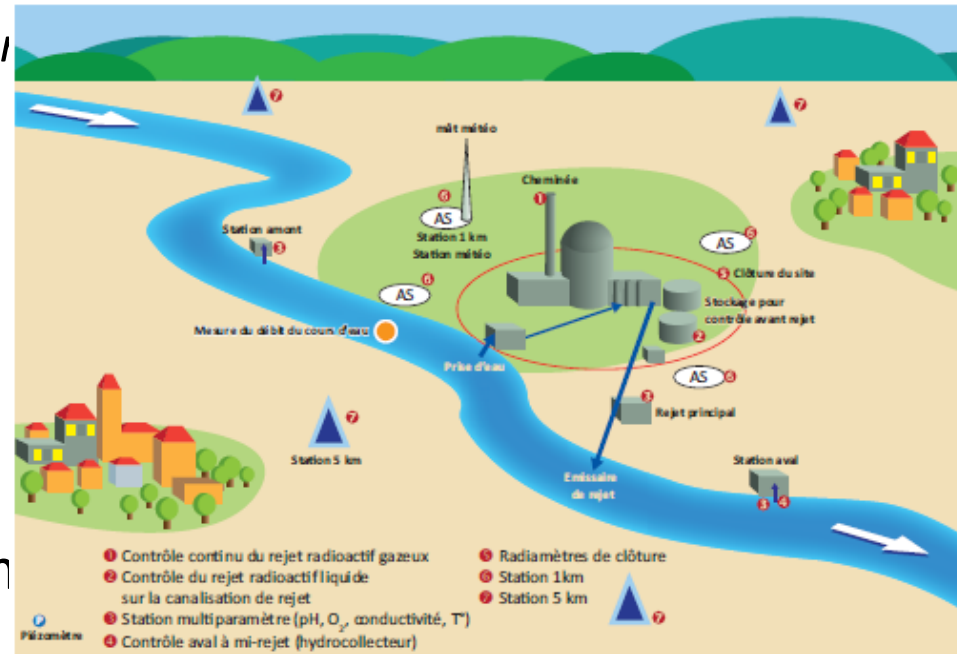
→ *All of these actors are gathered in the « National network of measurement of the radioactivity in the environment (RNM) »*

- Ministerial order of 7 February 2012 setting general rules applicable to nuclear installations :

Art. 4.2.1. - *the licensee defines and implements systems for monitoring:*

- *water intakes and consumption*
- *emissions,*
- *and the environment that could be affected by the installation*

- The monitoring program is set in ASN resolution n° 2013-DC-0360 of 16 July 2013



Monitoring around a NPP



Local

Around Nuclear installations
periodic



Re
m

+ specific monitoring during emergency situation

Foodstuff consideration



Regional

A focused oversight territories and taking into account the societal aspect

OPERATOR
According to
ASN
requirement



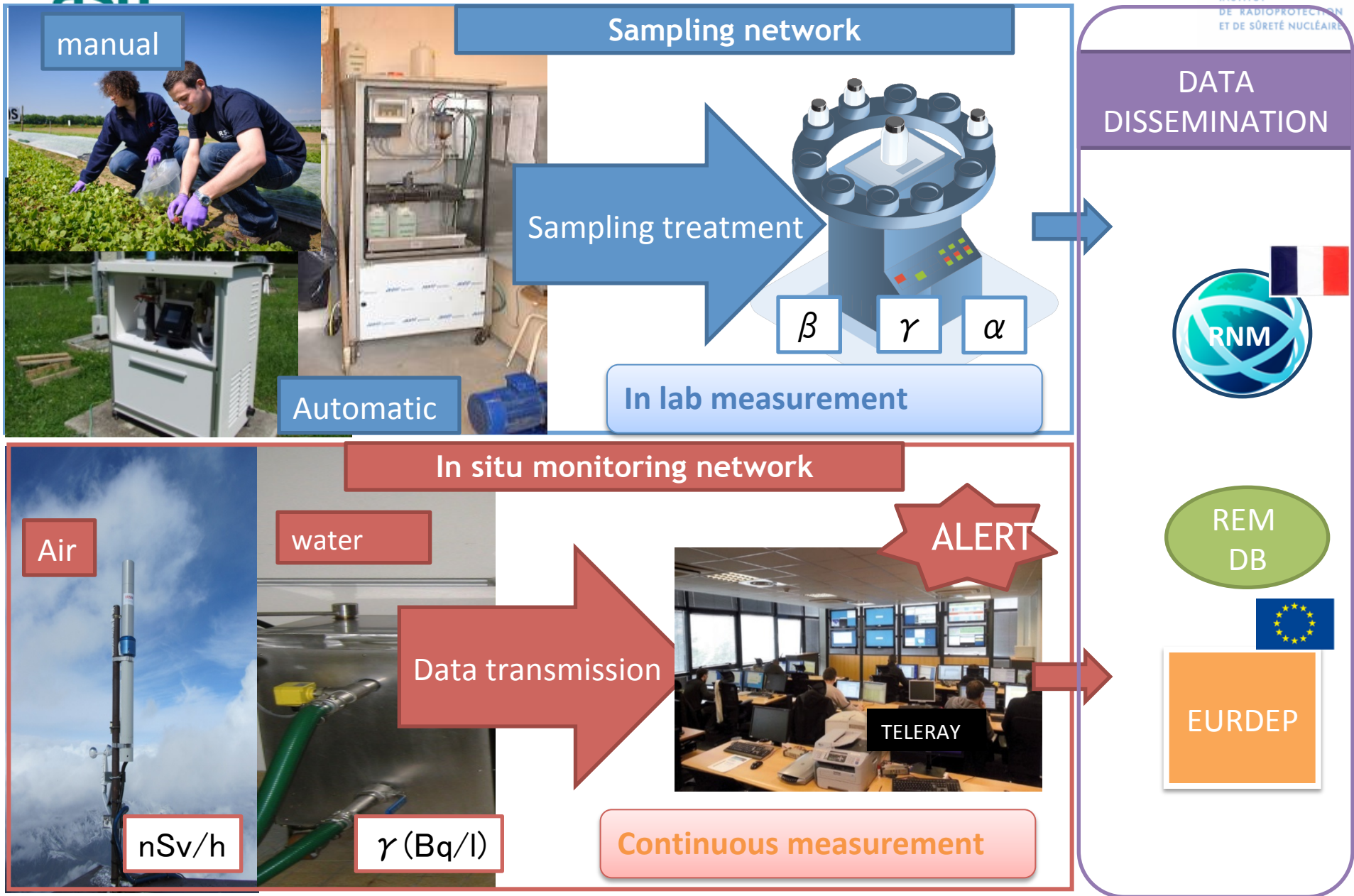
IRSN
To complete and cross control the OPERATOR monitoring

IRSN
and institutional partners (foodstuff)

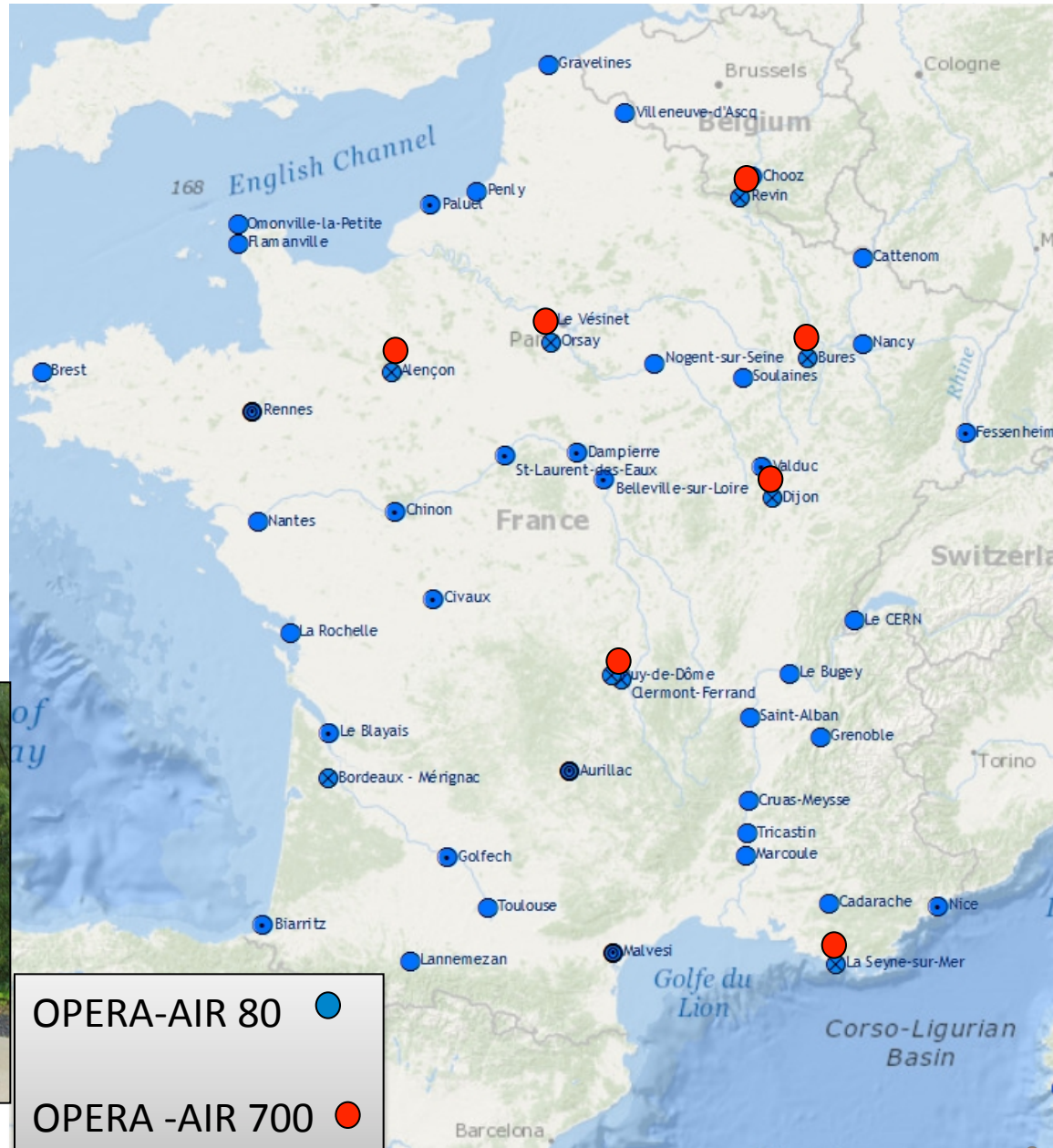


IRSN
With local relationship (association)

Specific studies



- Two main objectives :
 - ✓ Have a reference sampling point near nuclear facilities
 - ✓ Be able to detect any increase of radioactive airborne concentration on the whole national territory

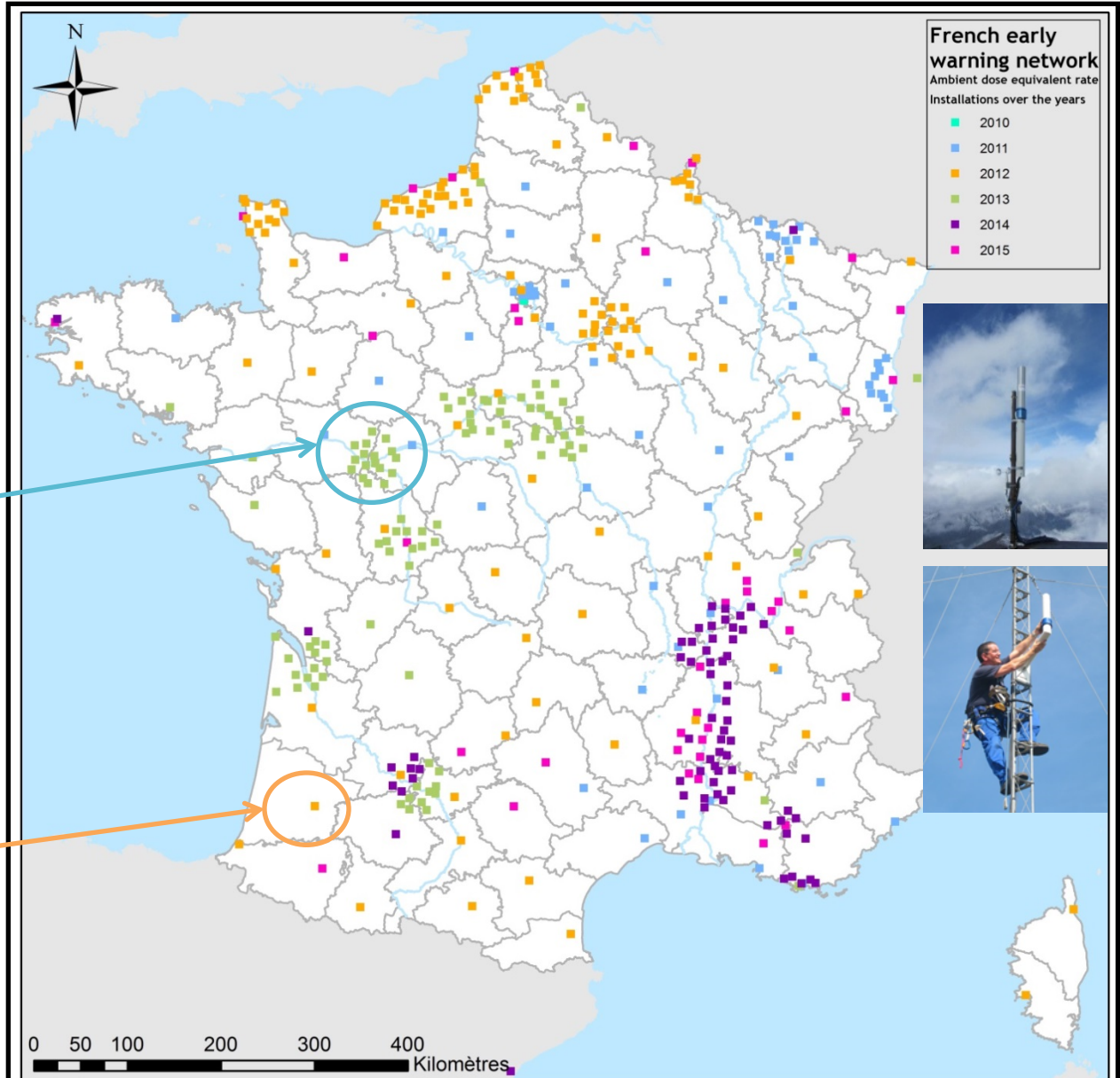


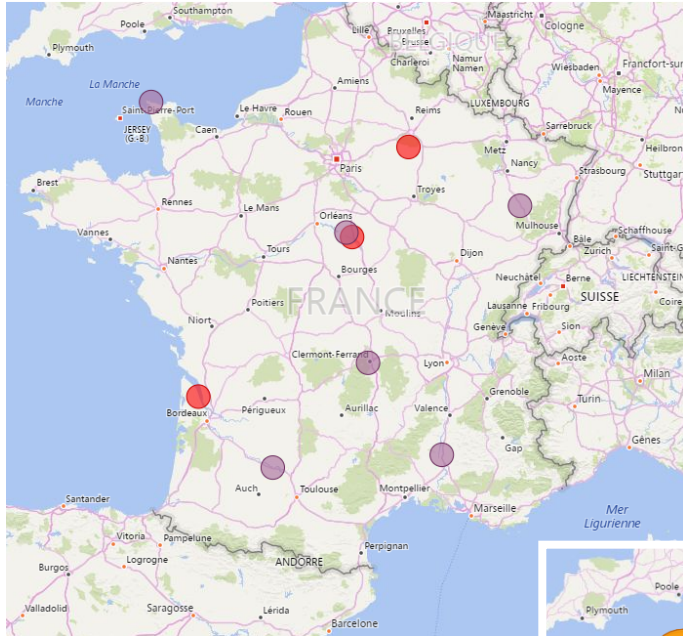
OPERA-AIR 80	●
OPERA -AIR 700	●

- A network (re) designed in 2010
- 420 sensors (CP)
- Complementarity to OPERATOR network (EDF, ORANO)

Sensors around nuclear facilities for early alert purpose

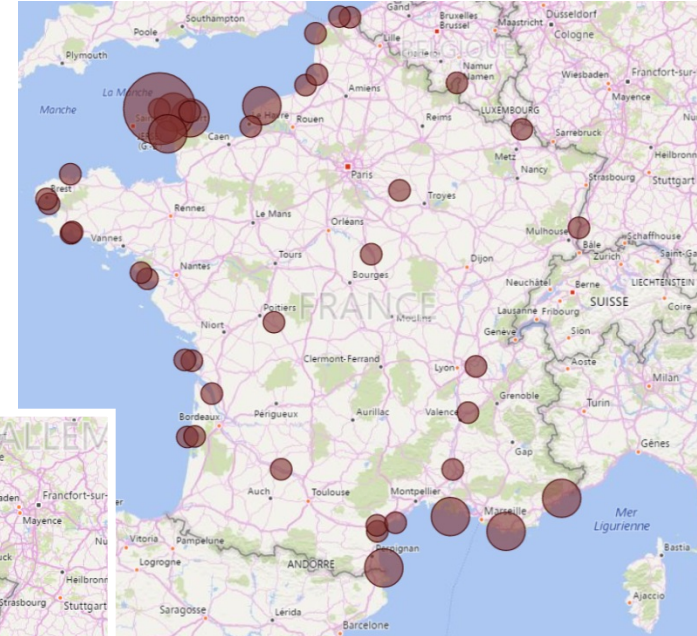
Sensor installed in selected town for national monitoring



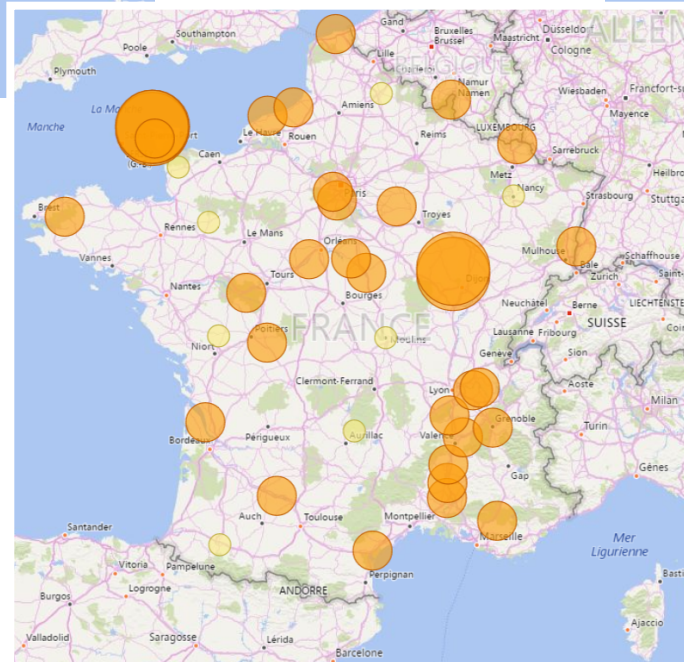


- Meat
- Wine

Milk



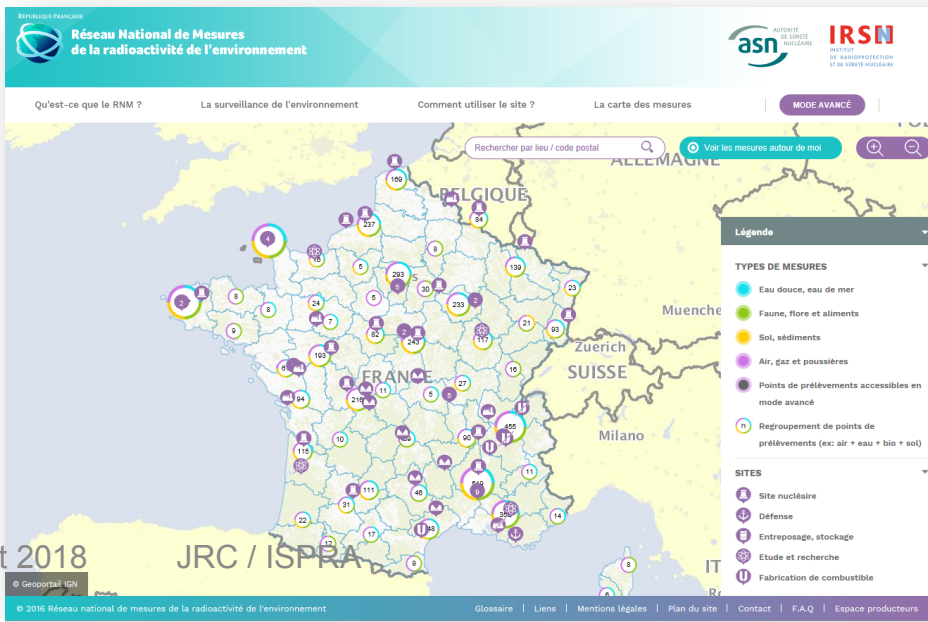
Fish and mollusc



And also :
 Cereals
 Salad,
 Fruits, Vegetables
 Mushrooms

• Aims of the Network :

- Ensure **transparency of information** concerning radioactivity of the environment. Give free access to the public to :
 - ↳ **All results of the measures** carried out in the environment by all the actors (IRSN, nuclear operators, associations, private laboratories,...)
 - ↳ **Information on radiological impact** of nuclear activities in France
- Ensure **quality of the data** concerning radioactivity of the environment, by imposing to the laboratories to get an **Approval by ASN**



<http://www.mesure-radioactivite.fr>

- For getting approval, the laboratory has to:
 - Comply with the **requirements** of the **ASN Resolution n° 2008-DC-0099** of 29th April 2008 amended
 - Has a management system that complies with **norm ISO/CEI 17025**
 - Realize **sampling & analyses** according to existing norms
 - Demonstrate its ability, amongst others by participating to **Interlaboratory comparisons (EIL)** organized by IRSN.
- Around 60 laboratories are currently approved by ASN
- List of approved laboratories available on :
<https://www.asn.fr/Media/Files/00-Bulletin-officiel/liste-agrements/Liste-des-laboratoires-agrees-pour-les-mesures-de-la-radioactivite-de-l-environnement-3-juillet-2018>
- The period of validity of the approval is 5 years
- ASN carries out specific inspections of approved laboratories. It may, in certain cases: temporarily extend an authorization, refuse, suspend, withdraw or suspend the issue of an authorization

- 2003: creation of the RNM
- 2010: the first RNM website is online
- In 2017, IRSN organised 6 inter-laboratory trials (EIL) ; 70 EIL since 2003 cover 58 types of approval
- 2016: new RNM website. 2,300,000 data in the RNM database
- In 2017, ASN issued 123 approvals or licence renewals
- There are today 65 approved laboratories, representing 880 valid approvals:
 - Water radioactivity monitoring: → 57 laboratories
 - Biological matrix measurements (food chain: fauna, flora, milk), atmospheric dust, air or ambient γ dosimetry: → between 30 and 40 laboratories
 - Soils and sediments: → 32 laboratories
 - Most laboratories are competent to measure γ -emitters in all environmental matrices, only about 10 laboratories are approved to measure ^{14}C , transuranic or radioelements of natural uranium and thorium chains in water, soils and sediments, and biological matrices, few laboratories for specific measures (e.g. ^{99}Tc , ^{85}Kr)

The National framework of measures of the radioactivity present in the environment (RNM)

Website: www.mesure-radioactivite.fr

- **Informed public:** access to the full data base, with selections

MODE AVANCÉ

- **General public:** home page, simplified information, in two steps

MODE GUIDÉ

1

General informations, statistics on the department level or in the neighbourhood of a nuclear installation

2

Some selected type of measurements, with explanations to facilitate the understanding of the results

1

First step : General information, statistics data on the type of sample and data providers

REPUBLIQUE FRANÇAISE
Réseau National de Mesures de la radioactivité de l'environnement

Qu'est-ce que le RNM ?
La surveillance de l'environnement
Comment utiliser le site ?
La carte des mesures
Actualités

MODE AVANCÉ

MOSELLE (57)

Sur ce territoire, **46523** prélèvements et **57019** mesures réalisés et disponibles en base RNM
1125 mesures transmises au cours des 3 derniers mois.

Site(s) présent(s) dans ce département :

- CNPE de Cattenom

Statistique des mesures : [Par type de mesure](#) | Par organisme

- Eau douce, eau de mer (14.57%)
- Faune, flore et aliments (2.6%)
- Sol, sédiments (1.19%)
- Air, gaz et poussières (34.52%)
- Sondes de télémesures (dose ambiante) (47.12%)

57019 mesures

Consulter les **32451** mesures témoins disponibles dans ce département.

Dose ambiante

Césium 137 Air

Tritium Air

Tritium Eau de surface

Carbone 14 Poisson

Carbone 14 Herbe

Statistique des mesures : [Par type de mesure](#) | [Par organisme](#)

57019 mesures

IRSN (58.8%)	33530
EDF (40.98%)	23365
ALQA (0.17%)	96
ASN (0.05%)	28

Légende

TYPES DE MESURES

- Eau douce, eau de mer
- Faune, flore et aliments
- Sol, sédiments
- Air, gaz et poussières
- Points de prélèvements accessibles en mode avancé
- n Regroupement de points de prélèvements (ex: air + eau + bio + sol)

SITES

- Centrale nucléaire
- Défense
- Entreposage, stockage
- Etude et recherche
- Fabrication de combustible
- Site minier
- Traitement, maintenance
- Absence de rejets ou site déclassé
- Regroupement de sites

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[Glossaire](#) | [Liens](#) | [Mentions légales](#) | [Plan du site](#) | [Contact](#) | [F.A.Q](#) | [Espace producteurs](#)

2

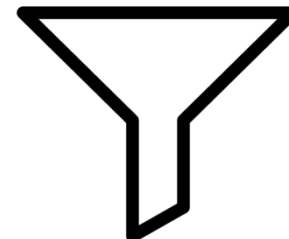
15 selected measurements representative of the radiological state of the environment

data base

Compartiment	Nature	Radion	Unité	Nombre d'organismes	Nombre de mesures
Eau	Eaux douces (eau de pL...				
Eau	Eaux douces (eau de pL...	Ruthénium 106	becquerel par litre	1	7
Eau	Eaux douces (eau de pL...	Antimoine 125	becquerel par litre	1	7
Eau	Eaux douces (eau de pL...	Césium 134	becquerel par litre	1	7
Eau	Eaux douces (eau de pL...	Césium 137	becquerel par litre	1	7
Eau	Eaux douces (eau de pL...	Tritium total	becquerel par litre	1	7
Eau	Eaux douces (eau de pL...	Cobalt 60	becquerel par litre	1	7
Eau	Eaux douces (eau de pL...	Strontium 90	becquerel par litre	1	7
Eau	Eaux douces (eau de pL...	Alpha global	becquerel par litre	1	7
Eau	Eaux douces (eau de pL...	Beta global	becquerel par litre	1	7
Faune, flore et aliments	Fruits d'arbres et arbus...				
Faune, flore et aliments	Fruits d'arbres et arbus...	Ruthénium 106	becquerel par kg sec	1	1
Faune, flore et aliments	Fruits d'arbres et arbus...	Argent 110m	becquerel par kg sec	1	2
Faune, flore et aliments	Fruits d'arbres et arbus...	Antimoine 124	becquerel par kg sec	1	2
Faune, flore et aliments	Fruits d'arbres et arbus...	Antimoine 125	becquerel par kg sec	1	2
Faune, flore et aliments	Fruits d'arbres et arbus...	Iode 129	becquerel par kg sec	1	1
Faune, flore et aliments	Fruits d'arbres et arbus...	Iode 131	becquerel par kg sec	1	1
Faune, flore et aliments	Fruits d'arbres et arbus...	Césium 134	becquerel par kg sec	1	2
Faune, flore et aliments	Fruits d'arbres et arbus...	Césium 137	becquerel par kg sec	1	2

Type of sampling (29) - Radionuclide (99) – measurement units (9)

15 types of measurements



1322 combinations

MODE AVANCÉ



15 landmark values

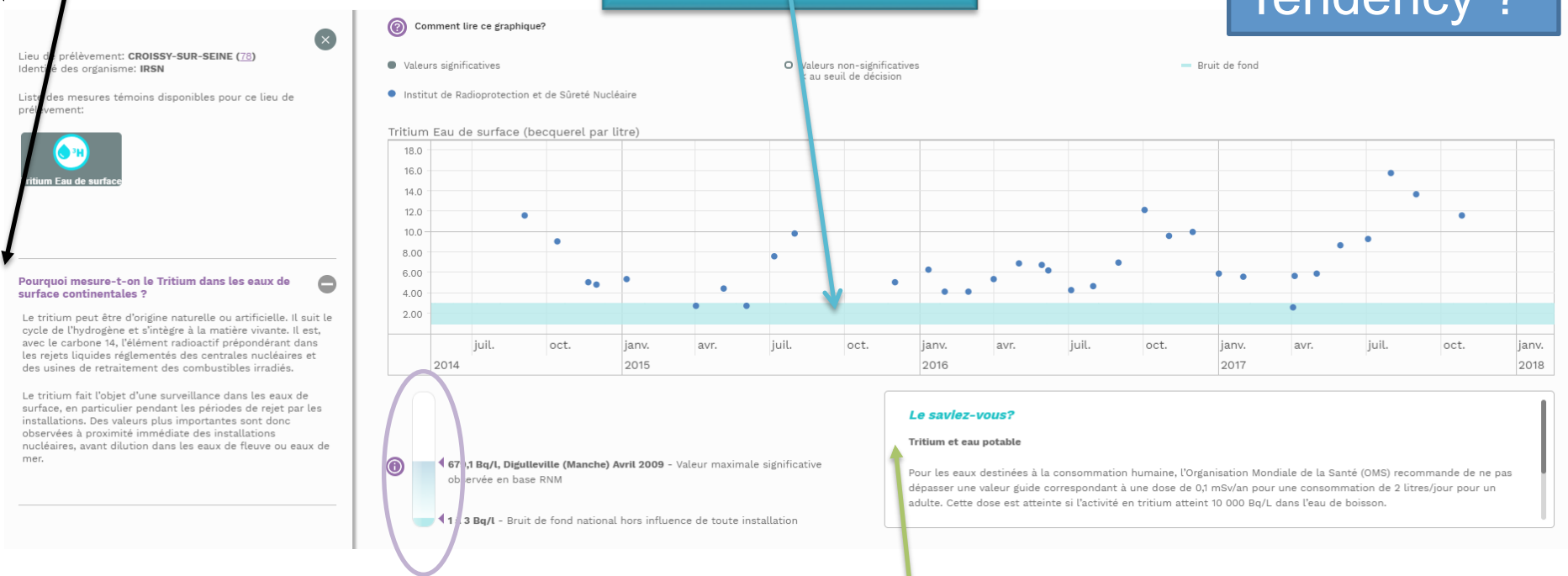
MODE GUIDÉ

2

“Why this measurement ?”

National radioactive background

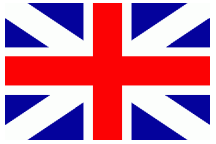
Tendency ?



Comparison of the results with :

- The national highest value
- The national radioactive background

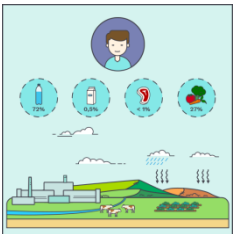
Highlights: “Did you know ...?”



- Web site in english to share the information with foreign experts

actualités

- News! Providing link with recent radiological events



- Enrich the site with infographics to provide more accessible information to the general public



Thank you for your attention

“ASN is tasked, on behalf of the State, with regulating nuclear safety and radiation protection in order to protect workers, public and the environment from the risks involved in nuclear activities in France”

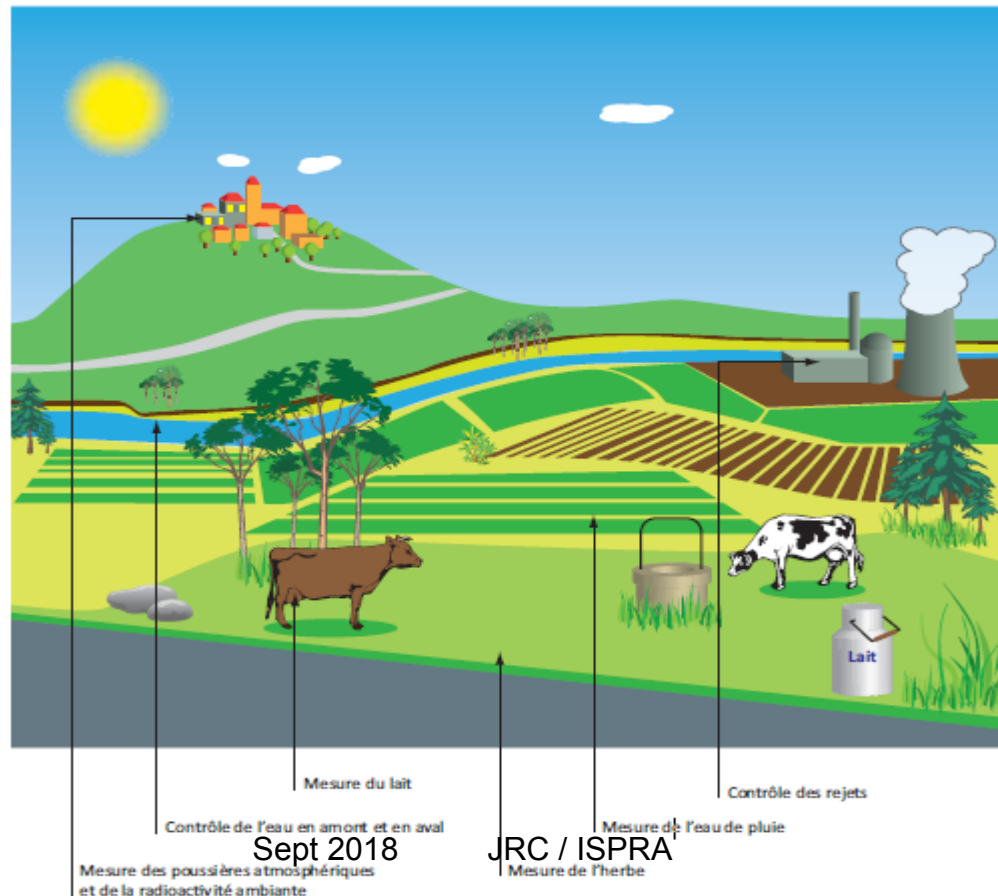
- Concerning environmental protection, ASN is in charge of :
 - organizing a permanent watch in the radiation protection sphere, which includes **radiological monitoring of the environment** on the national territory ;
 - Setting **prescriptions** concerning **gaseous and liquid discharges** and waste issued by nuclear installations ;
 - Defining, coordinating and implementing the regulation and control politics concerning **monitoring of the environment** around nuclear installations ;
 - Delivering **Approvals for laboratories** that carry out measures of the radioactivity of the environment.

- The environmental monitoring aims at:
 - contributing to the **knowledge of the radiological and radio-ecological state of the environment** of the installation, and its evolution;
 - helping verify that the **impact of the installation** on health and the environment, particularly foodstuffs, is in conformity with the impact study;
 - **detecting any abnormal increase** in radioactivity as early as possible;
 - ensuring there are no installation **malfunctions**, by analysing the ground water among other things.

Obligations for the nuclear operator

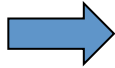
- The environmental monitoring measures shall:
 - include taking measurements relative to the parameters and **substances (radioactive or not)**, in the different **compartments** of the environment (air, water, soil), in the biotopes and the food chain;
 - be at least equivalent to those applicable to other « **installations classified on environmental protection grounds** »;
 - also include environmental screening for **substances present in the installation and whose emission is not provided for in the impact study.**
- The licensee **informs** ASN, IRSN and the Prefect of **any abnormal rise in the environmental radioactivity level.**

Content of the environmental monitoring programme around a nuclear installation



Compartiment de l'environnement	Nature du contrôle	Périodicité	Paramètres ou analyses (toute installation)	Paramètres ou analyses (installations susceptibles d'émettre des alphas)
Air au niveau du sol et radioactivité ambiante	Activité volumique dans l'air ⁽¹⁾	Hebdomadaire à Mensuelle	En fonction des rejets de l'installation	
	Poussières atmosphériques ^{(2) (3)}	Quotidienne	Détermination de l'activité bêta globale Spectrométrie gamma si l'activité bêta globale est supérieure à 2 mBq/m ³	Détermination de l'activité alpha globale Spectrométrie gamma si l'activité alpha globale est supérieure à 2 mBq/m ³
		Mensuelle	Spectrométrie gamma sur regroupement des filtres quotidiens d'une même station	Spectrométrie alpha sur regroupement des filtres quotidiens d'une même station
Radioactivité ambiante dans un rayon de 10 km autour de l'installation ⁽⁴⁾	Enregistrement continu	Débit de dose gamma ambiant		
Précipitations atmosphériques	Prélèvement continu des précipitations dans l'environnement	Bimensuelle	Détermination de l'activité bêta globale Tritium ⁽⁵⁾	Détermination de l'activité alpha globale
Eaux de surface	Contrôle des eaux de surface en aval des rejets	Mensuelle	Détermination de l'activité bêta globale Tritium ⁽⁵⁾ Potassium ⁽⁵⁾	Détermination de l'activité alpha globale
Eaux souterraines	Contrôle des eaux souterraines	Mensuelle à annuelle	Détermination de l'activité bêta globale Tritium ⁽⁵⁾ Potassium ⁽⁵⁾	Détermination de l'activité alpha globale
Végétaux	Prélèvement de végétaux dans une zone située sous les vents dominants	Mensuelle Annuelle Trimestrielle	Spectrométrie gamma Tritium ⁽⁵⁾ (HTO) Carbone 14 ⁽⁶⁾	Spectrométrie alpha
Lait	Prélèvement de lait produit au voisinage de l'installation (0 - 10 km)	Mensuelle Annuelle Trimestrielle Annuelle	Spectrométrie gamma Tritium ⁽⁵⁾ Carbone 14 ⁽⁶⁾ Strontium 90 ⁽⁶⁾	
Sol	Prélèvement des couches superficielles des terres	Annuelle	Spectrométrie gamma	
Sédiments, faune et flore aquatiques	Prélèvements de sédiments, de faune et de flore aquatiques	Annuelle	Spectrométrie gamma Tritium ⁽⁵⁾ (HTO) Tritium ⁽⁵⁾ (OBT) sur poissons, crustacés et mollusques Carbone 14 sur poissons ⁽⁶⁾	
Productions agricoles	Prélèvement sur les principales productions agricoles, notamment dans les zones de vent dominant	Annuelle	Tritium ⁽⁵⁾ (HTO et OBT) Potassium ⁽⁵⁾ Spectrométrie gamma	

Obligations for operators

- In the framework of the environmental monitoring programme, the measures have to be carried out by laboratories to which ASN has delivered a specific **Approval** 
- Required analytical performances are set in ASN Resolution n° 2013-DC-0360 of 16 July 2013, e.g. **decision thresholds**, use of normalised methods, etc.

Paramètre	Seuil de décision
Beta global des aérosols	10^{-4} Bq/m ³
alpha global des aérosols	10^{-4} Bq/m ³
Spectrométrie gamma des aérosols	10^{-5} Bq/m ³ (¹³⁷ Cs regroupement de filtres) $5 \cdot 10^{-5}$ Bq/m ³ (autres cas)
³ H atmosphérique	0,5 Bq/m ³
¹⁴ C atmosphérique	0,1 Bq/m ³
beta global dans l'eau	0,25 Bq/L
alpha global dans l'eau	0,05 Bq/L
³ H dans l'eau	10 Bq/L
³ H dans les matrices biologiques	10 Bq/L (dans l'eau de combustion)
Spectrométrie gamma dans les matrices biologiques	0,5 Bq/kg
Sept 2018	JRC / ISPRA

Information of ASN and of the public

- The operator transmits each month to ASN a **register** presenting results of the emission and environmental monitoring
- Results of the environmental monitoring are published on **RNM** website : www.mesure-radioactivite.fr
- The licensee **informs** ASN, IRSN and the Prefect of **any abnormal rise in the environmental radioactivity level**.
- The operator elaborates an **annual report** presenting the synthesis of the **emissions** and of the **monitorin of the environment**. This report is made available to the public.
- The operator carries out every 10 years a **study of the chemical and radiological state of the environment**.

Controls carried out by ASN

- **Control of the registers** transmitted each month by the operators, presenting all the results of monitoring of the gaseous and liquid discharges of the installation and results of the monitoring of the environment
- **Inspections** of nuclear installations, some of which include taking samples of liquid or gaseous effluents for analysis by an independent laboratory (Goal for this type of inspections: 10 to 20 inspections/yr, 1 site every 2 years)
- **Inspections** of laboratories to which ASN delivered an Approval for carrying out measures of the radioactivity present in the environment (around 12 inspections / yr)
- Control of the **annual reports « environment »**, and of the reports presenting the radiological and chemical state of the environment issued every 10 years...

- Actors of the Network :



chairs the Steering Committee and the Approval Commission, insures the secretariat of the Approval Commission



insures the secretariat of COPIL, organizes intercomparisons, develops and administers the information system and website

Administrations and state units

Ministries of health, environment, agriculture, defense
Consumer affairs, regional health agency, ASN divisions, IRSN ...

Operators

EDF, AREVA, ANDRA, CEA, National navy, ILL, Synergie health, Solvay

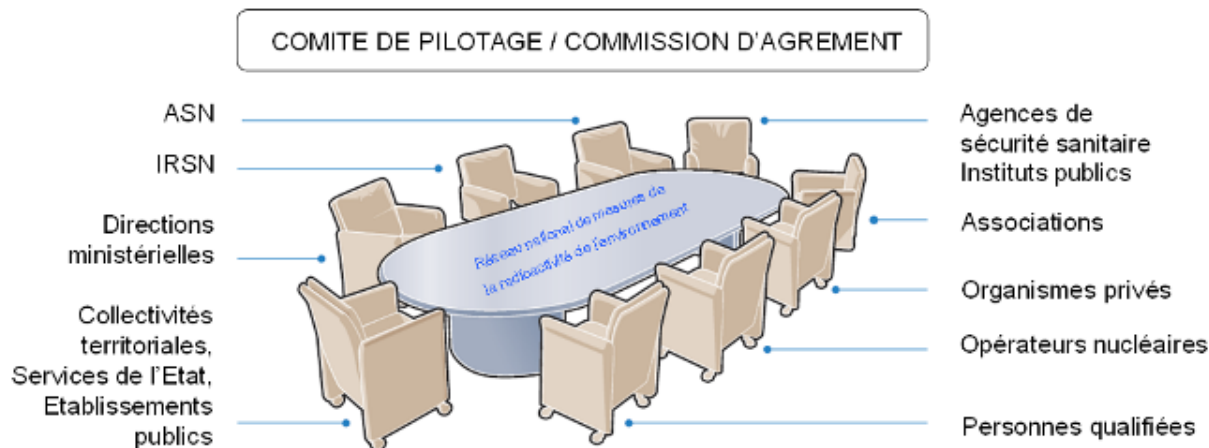
Associations

GSIEN, ACRO, ANCLI & CLIs, ALQA, BNEN

The National network of measures of the radioactivity present in the environment (RNM)

- **2 steering bodies :**

- The **steering committee** ([ASN Resolution n° 2008-DC-0116 of 4th November 2008](#)) : defines the strategic lines of the Network
- The **Commission of Approval** ([ASN Resolution n° CODEP-DEU-2013-061297 of 12nd November 2013](#)) : gives advice to ASN on the application files transmitted by the laboratories for getting





Actors and organisation

The RNM lives with two organisations under the presidency of ASN:

➤ The steering committee ([ASN resolution n° 2008-DC-0116 of 4th November 2008](#)), to define the strategic orientations of the RNM

The members are representatives of: ministries of environment, health, agriculture, economy; operators; local information committees; associations; IRSN

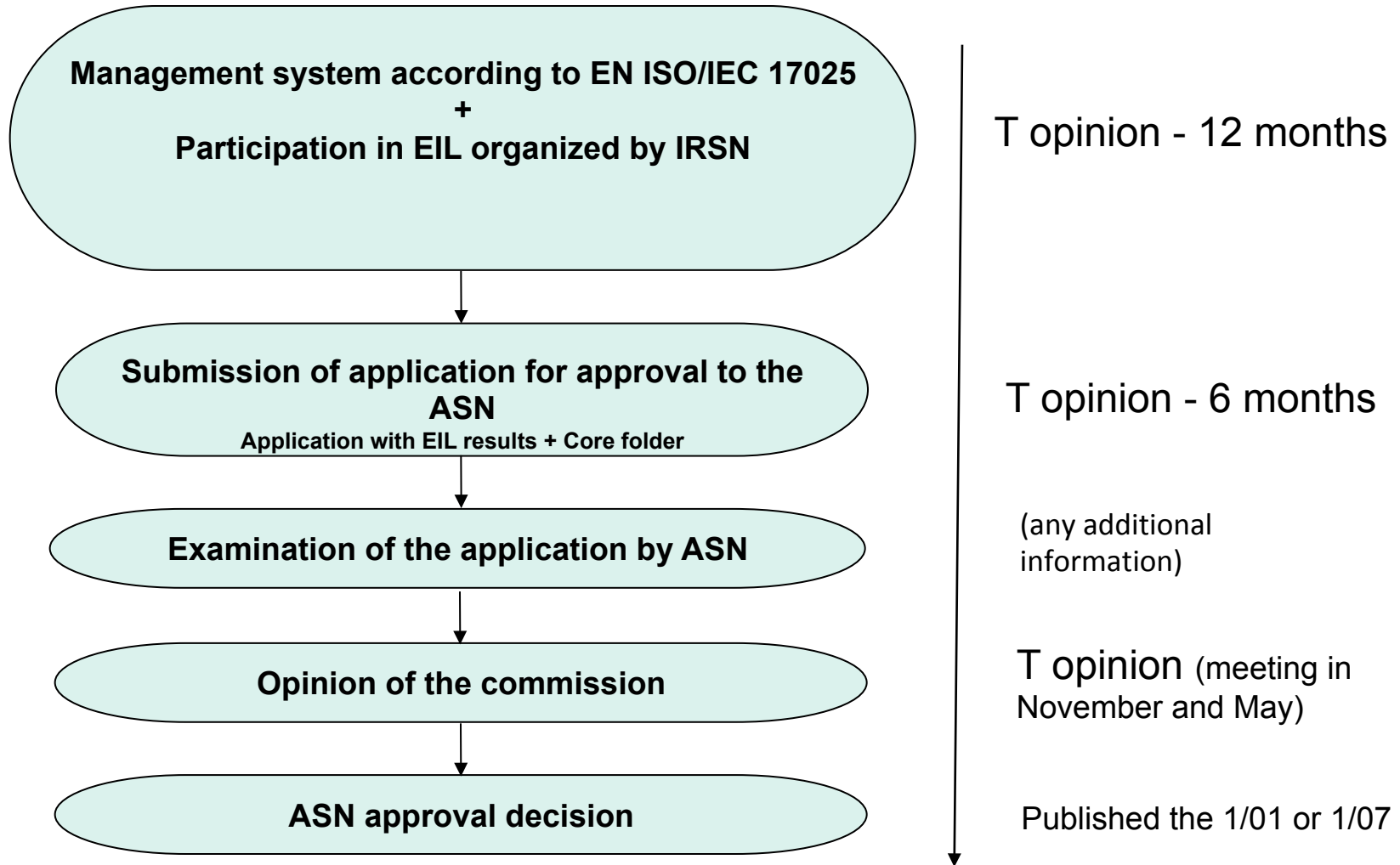
➤ The commission ([ASN resolution n° CODEP-DEU-2013-061297 of 12nd November 2013](#)), to give an advice on the applications for the approvals to be granted by ASN

The members are : representatives of ministries of environment, health, agriculture, economy; the president of BNEN; 2 representatives of the approved laboratories (operators, associations, private laboratories); IRSN (accredited ISO 17043 laboratory); 2 qualified persons

Matrice Catégorie de mesures radioactives		Type 1 : Eaux - Eaux de consommation, Eaux de surface, Eaux souterraines, Eaux de rejet, Eaux de mer ...	Type 2 : Matrices sols – Terres, sédiments boues, ...	Type 3 : Matrices biologiques – Végétaux, lait ⁽¹⁾ , faune, flore...	Type 4 : Aérosols sur filtre	Type 5 : Gaz air	Type 6 : Milieu ambiant (sol/air)	Type 7 : Denrées alimentaires pour contrôle sanitaire								
		.._01	.._02	.._03	.._04	.._05 ⁽²⁾	.._06	.._07	.._08	.._09	.._10	.._11	.._12	.._13	.._14	.._15
.._01	Radionucléides émetteurs $\gamma > 100$ keV	1_01	2_01	3_01	4_01	5_01	-	7_01								
.._02	Radionucléides émetteurs $\gamma < 100$ keV	1_02	2_02	3_02	4_02	5_02	-	7_02								
.._03	Alpha global	1_03	-	-	4_03	-	-	-								
.._04	Bêta global	1_04	-	-	4_04	-	-	-								
.._05 ⁽²⁾	³ H	1_05	2_05	3_05	-	5_05	-	-								
.._06	¹⁴ C	1_06	2_06	3_06	-	5_06	-	-								
.._07	⁹⁰ Sr/ ⁹⁰ Y	1_07	2_07	3_07	4_07	-	-	-								
.._08	Autres émetteurs bêta purs	1_08	2_08	3_08	-	-	-	-								
.._09	Isotopes de U	1_09	2_09	3_09	4_09	-	-	-								
.._10	Isotopes de Th	1_10	2_10	3_10	4_10	-	-	-								
.._11	²²⁶ Ra + descendants	1_11	2_11	3_11	-	²²² Rn : 5_11	-	-								
.._12	²²⁸ Ra + descendants	1_12	2_12	3_12	-	²²⁰ Rn : 5_12	-	-								
.._13	Isotopes de Pu, Am, ...	1_13	2_13	3_13	4_13	-	-	-								
.._14	Gaz halogénés	-	-	-	-	5_14	-	-								
.._15	Gaz rares	-	-	-	-	5_15	-	-								
.._16	Dosimétrie gamma	-	-	-	-	-	6_16	-								
.._17	U pondéral	1_17	2_17	3_17	4_17	-	-	-								

(1) Un agrément délivré pour les mesures des radionucléides émetteurs γ (code 01 ou 02) dans une matrice de type 1 est transposable aux mesures de ces mêmes radionucléides dans du lait sous forme liquide, et réciproquement.

(2) Un agrément délivré pour les mesures du tritium (code 05) dans une matrice de type 1 est transposable aux mesures de ce radionucléide dans l'air (sous réserve de la détermination de la quantité d'air prélevée).



- Meeting regulatory requirements (ASN Decision 2008-DC-0099 amended)
- Have a management system in place that meets the EN ISO/IEC 17025 standard
- Carry out sampling and measurements in accordance with normative requirements

**Application for approval
(scope of the application)
+ Core folder**

- Demonstrate its ability to correctly perform radioactivity measurements by obtaining satisfactory results at IRSN's EILs

**Laboratory results at the EIL
+
feedback
(continuous improvement...)**

- ASN checks:
 - Completeness and conformity of the application
 - Compliance with regulatory provisions
 - Compliance with the requirements of EN ISO/IEC 17025 through the implementation of a management system
- ASN analyses:
 - Laboratory results at the EIL
 - Feedback for the laboratory, if applicable
- ASN may carry out an inspection to check compliance with laboratory practices prior to approval being granted

⇒ Preparation of the file for the accreditation commission

- Summary on the compliance of laboratory practices with the standards
- Synthesis of the results and feedback for the laboratory

- The Committee has:
 - ASN analysis
 - the IRSN report presenting the results of the EILs

- It rules on anonymous applications for approval

- It bases its opinions on pre-defined criteria with levels of acceptability
 - “Technical” criteria for the results obtained at the EIL
 - Deviation from the reference value
 - Compatibility test
 - Score z

 - “Quality” criteria relating to the laboratory management system
 - EN ISO/IEC 17025 accreditation or Laboratory file
 - Laboratory control (ASN inspections)

S: satisfying
D: debatable
NS: unsatisfactory

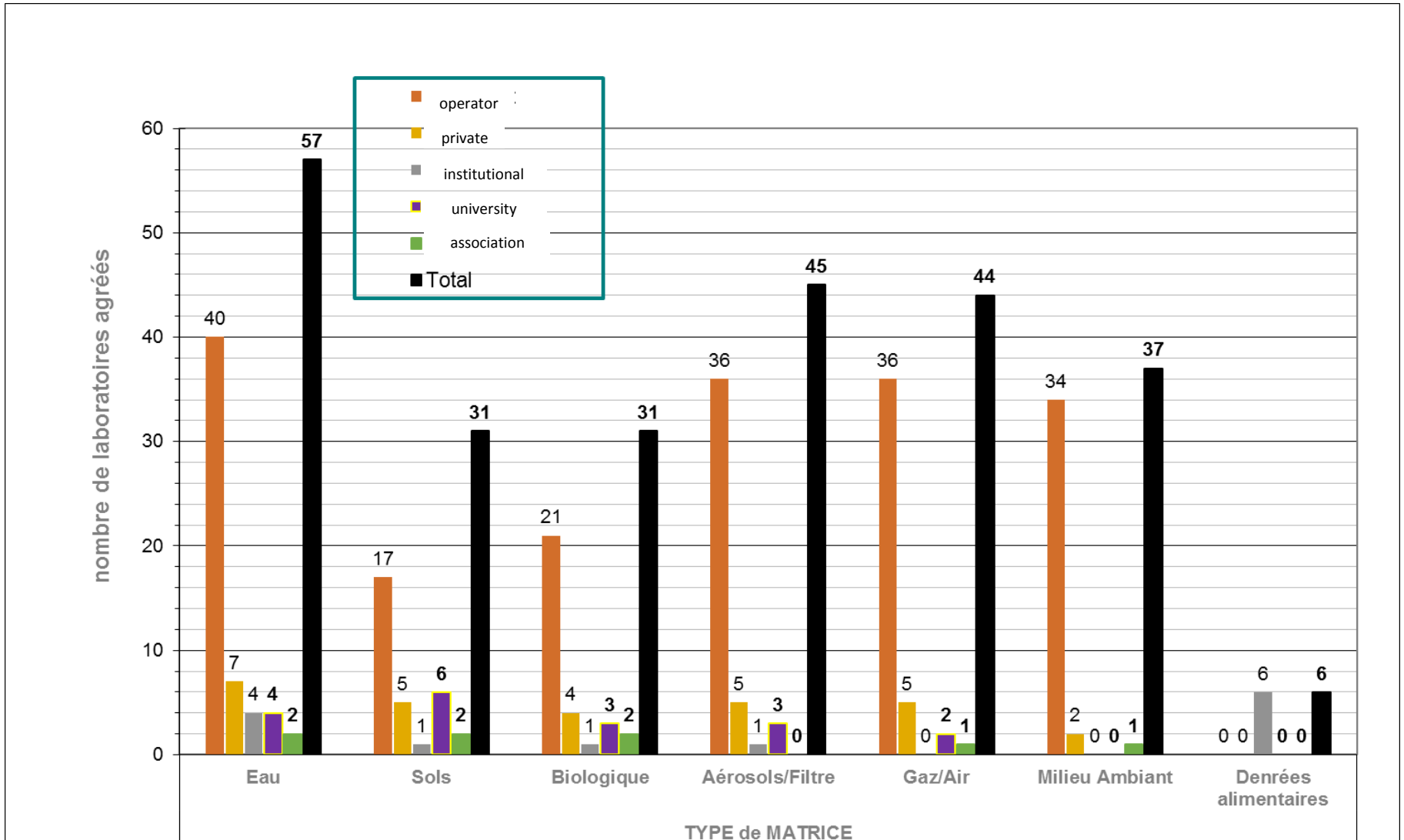
	Critère 1	Critère 2	Critère 2 bis	Critère 3
	Ecart en % $e_i = \frac{ x_{ref} - x_i }{x_{ref}}$	Test compatibilité $E_i = \frac{ x_{ref} - x_i }{\sqrt{(U_{ref})^2 + (U_i)^2}}$	Test compatibilité : E_n^*	Score : $z_i = \frac{ x_{ref} - x_i }{\sigma}$
S : satisfaisant	$ e \leq 15$	$ E_n \leq 1$	$ E_n^* \leq 1$	$ z \leq 2$
D : discutable	$15 < e < 20$	$1 < E_n < 1,3$	$1 < E_n^* < 1,3$	$2 < z < 3$
NS : non satisfaisant	$ e \geq 20$	$ E_n \geq 1,3$	$ E_n^* \geq 1,3$	$ z \geq 3$

Note : Le critère 2 est remplacé par le critère 2bis lorsque l'incertitude élargie U_i du laboratoire i excède 2 fois l'écart type σ_{lab} de l'ensemble des laboratoires (calculé avec l'exclusion des valeurs aberrantes). Dans ce cas U_i est remplacé par $U_i^* = 2 \sigma_{lab}$

The value of the criteria may be revised by the commission at each test to take account of the difficulty of the measurement, for example:

- sample processing requiring radiochemical separations prior to measurement
- low activity level
- proven variability of the EIL test objects

	Critère 1	Critère 2	Critère 3
	Accréditation COFRAC ou EA	Dossier joint à la demande d’agrément	Visite de contrôle éventuelle par l’ASN
S : satisfaisant	Accréditation dans le domaine de radioactivité sollicité	Conformité des pratiques du laboratoire avec les exigences ISO/CEI 17025	Conformité des pratiques du laboratoire avec les exigences ISO/CEI 17025
D : discutable	Accréditation hors domaine sollicité ou suspension d’accréditation	Non-conformité(s) n’ayant pas d’incidence sur les résultats de mesure	Non-conformité(s) n’ayant pas d’incidence sur les résultats de mesure
NS : non satisfaisant	‘sans objet’	Non-conformité ayant un impact significatif direct sur les résultats de mesure	Véto argumenté à l’issue de la visite de contrôle



Inspection of laboratories approved by the ASN

- **Decision n° 2008-DC-0099 amended (Article 14):**
"During the examination phase of an application for approval and during the period of approval, the Nuclear Safety Authority may monitor the conformity of the laboratory's practices with the requirements required for its approval. It shall inform the laboratory in writing of any discrepancies found during these checks."

- **A network of inspectors for approved laboratories:**
 - Team of trained ASN inspectors and IRSN technical experts (2018: 8 ASN inspectors, 1 ASND inspector, 4 technical experts)
 - 1 to 2 meetings of the inspectors' network per year

- **Inspection :**
 - In general, 2 ASN inspectors and 1 IRSN technical expert
 - Follow-up letter published on the ASN website
 - Rate: approximately 12 inspections per year, an approved laboratory is inspected at least once every 5 years