

IRSN

INSTITUT
DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE

Faire avancer la sûreté nucléaire

IRSN's missions in International Safeguards

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Definition of non-proliferation

■ A set of **commitments** taken within the framework of international treaties. They identify nuclear materials or chemical products with a dual use :

i.e.

- having civil applications (industry, research, pharmacy), but on which a CONTROL must be applied

because

- being able to enter the manufacturing of a weapon

The International Safeguards and the Chemical Weapon Convention implementation department

is the technical support of the french authorities for the implementation in the civil field of international **NON PROLIFERATION** treaties

Euratom Technical Committee
[CTE]



NUCLEAR field



CHEMISTRY



BIOLOGY

Ministry in charge of Industry



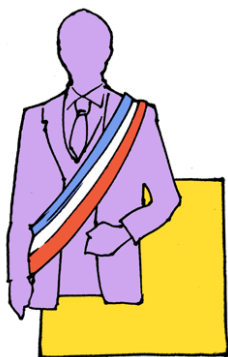
- Manage declarations



- Assess documentation



@ <http://non-proliferation.irsn.fr>



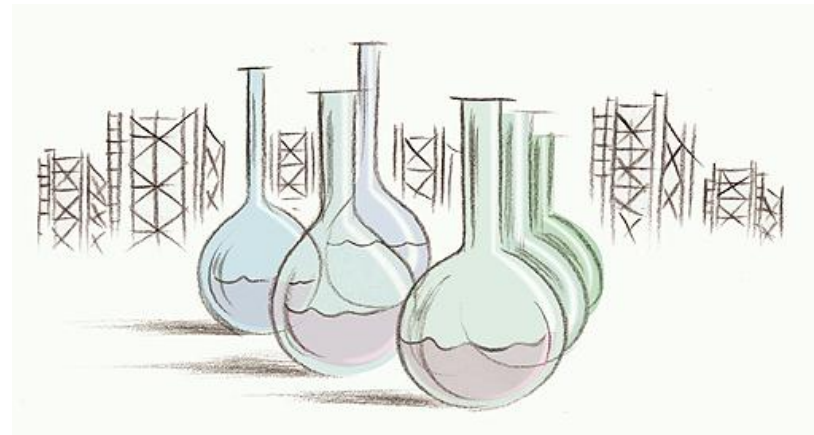
- Escort inspections
STATE REPRESENTATIVE



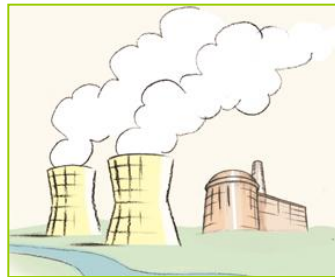
- Inform and advise
operators and authorities

Internl treaties establish a set of guarantees

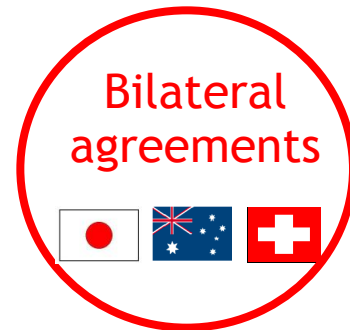
- by which it is possible to verify that a State party respects its commitments not to divert peaceful programmes for military purposes
- The system is based on the evaluation of the accuracy and the exhaustiveness of the declarations of a State concerning the nuclear and chemical materials
- The control of these commitments is made through the operators that implement these materials



example of the control of the nuclear materials



MN « holders » (operators)



INTERNATIONAL



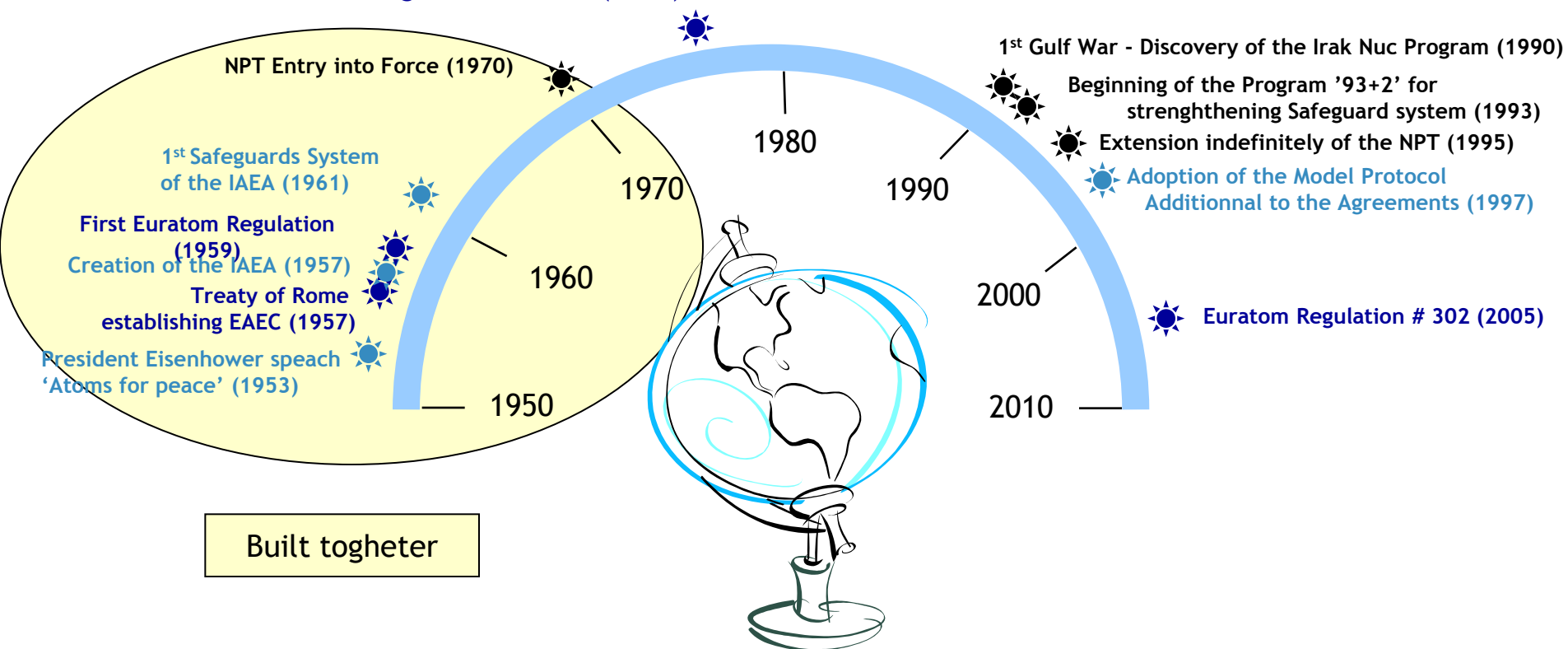
NATIONAL



History of the International Nuclear Safeguards



Euratom Regulation # 3227 (1976)



Built together



The IAEA system of guarantees

- 188 State party
- 3 Non state party : Inde, Israel, Pakistan + North Korea

The Non-Proliferation Treaty objectives

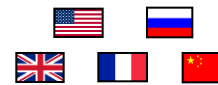


1. Favor the cooperation and the development of the nuclear energy for peaceful purposes

but

Limit the number of Nuclear Weapon States

2. Require a commitment to SP



NWS

➤ not to transfer to any recipient nuclear weapons or other nuclear explosive devices

➤ not in any way to assist, encourage, or induce any non-nuclear-weapon State to manufacture or otherwise acquire nuclear weapons

NNWS

➤ not to receive from any transfer nuclear weapons or other nuclear explosive devices

➤ not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices

3. Allow a control on the State's commitment

NWS

NNWS

State Parties must conclude a safeguard agreement and accept a control on Nuclear materials

IAEA Safeguards

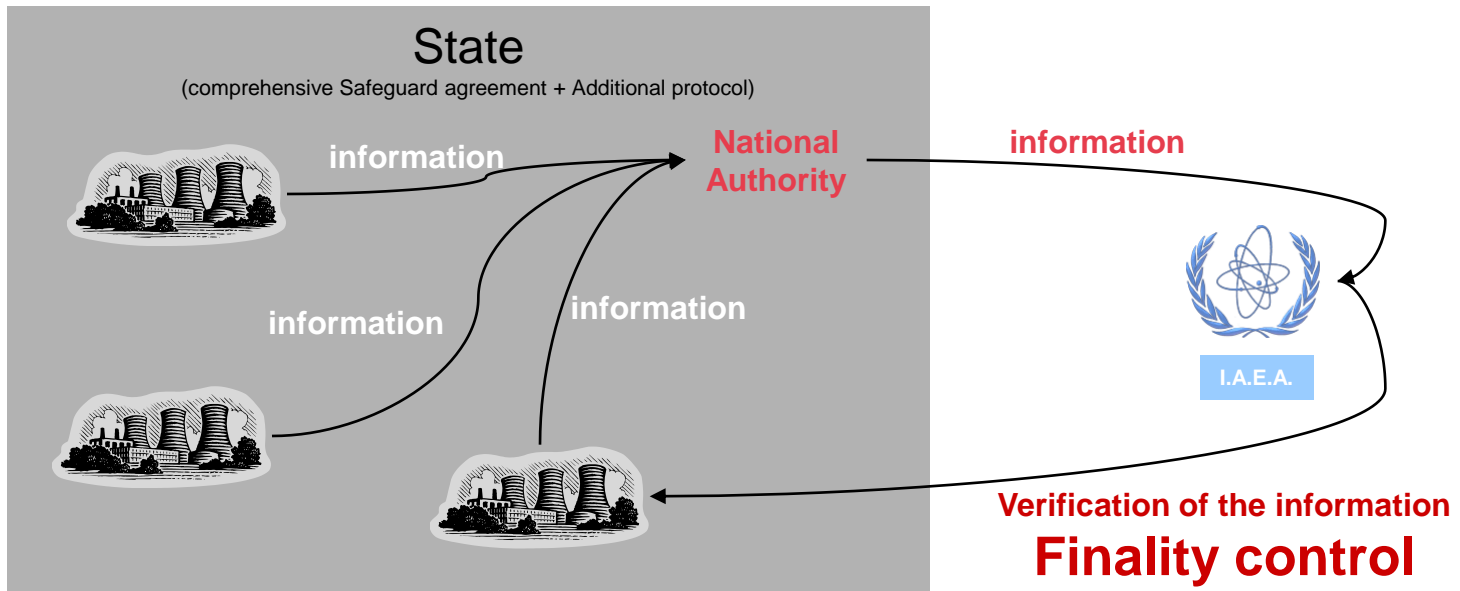
Objective

aims to timely detect the diversion of **significant quantities** of **nuclear material** from peaceful nuclear activities to the manufacture of nuclear weapons or of other nuclear explosive devices, or for unknown purposes, and prevent such diversion by the risk of **early detection**



Mechanism :

Concerned NM : U, Pu, Th



The strengthening of guarantees



- The discovery of the clandestine program in Iraq and the problems met in North Korea (although signatories of the NPT and welcoming inspections) brings to light the weakness of the means at the disposal of the IAEA to detect undeclared activities

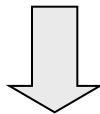
- Strengthening in 2 directions :
 - On the controls operated by IAEA. : [The Additional Protocol](#)
 - The Nuclear Suppliers Group makes a commitment not to supply nuclear equipment to the countries that would not place all their activities under the control of the IAEA : the control of the exports

IAEA Safeguards

Information to be provided by the State

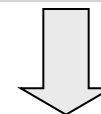
SAFEGUARDS AGREEMENT

- List of nuclear facilities
- Inventories of the nuclear materials inside the facilities
- Movements of nuclear materials inside and between facilities
- Design information of the facilities
- System of accounting for and control of nuclear material implemented in the facilities
- Notification of the international transfers of nuclear material



ADDITIONAL PROTOCOL

- **General description of the nuclear fuel cycle related R&D**
- Description of site (included closed-down and location outside facility)
- **Export and Manufacturing of some special equipment and non nuclear material**
- Location and production of mines
- Import and export of source material
- Location of high-level wastes
- **10 years nuclear fuel cycle related R&D plans**



The verification of these information is mainly carried out through routine inspection of the nuclear material in the facilities and complementary access (AP)



I.A.E.A.



European Commission Control [Euratom]

The European Atomic Energy Community (Euratom)



EURATOM

Initially created to coordinate the Member States' research programmes for the peaceful use of nuclear energy

The Treaty sets Euratom a lot of tasks :

- to promote research and ensure the dissemination of technical information.
- to establish uniform safety standards to protect the health of workers and of the general public and to ensure that they are applied.
- to facilitate investment and ensure the establishment of the basic installations necessary for the development of nuclear energy in the EU.
- to ensure that all users in the EU receive a regular and equitable supply of ores and nuclear fuels.
- • **to make certain that civil nuclear materials are not diverted to other purposes (chap.7)**
- to exercise the right of ownership conferred upon it with respect to special fissile materials.
- to foster progress in the peaceful uses of nuclear energy by working with other countries and international organisations (such as the International Atomic Energy Agency (IAEA)).

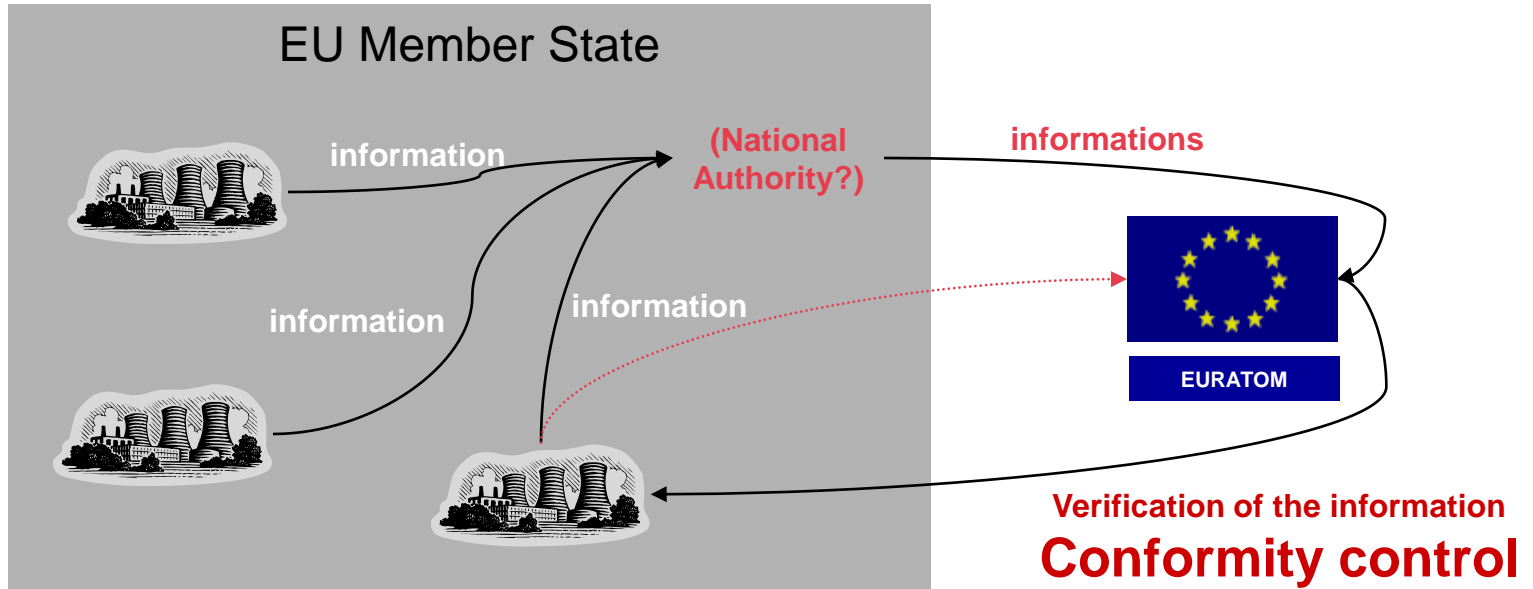
EURATOM Safeguards

Objectives (chap.7, art.77)

The Commission shall satisfy itself that :

- a) In the territories of Member States nuclear materials are **not diverted from their intended uses as declared by the users**,
- b) The provisions relating to supply and any particular safeguarding obligations assumed by the Community under an agreement concluded with a third State or an international organization are complied with.

Mechanism :

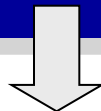


EURATOM Safeguards

The operators shall : (reg # 302/2005)

Chap 7, Art 84 (NWS) The control cannot extend in the materials intended for the needs of Defense

- organize a follow-up of the nuclear materials inside the facilities
- produce and transmit descriptive documents and accounting reports (inventory change report on nuclear materials inside and between facilities, Physical inventory listing and mass balance report, basic technical characteristics of the facilities
- Make an exhaustive annual inventory of all the materials
- Accept EURATOM inspections (318 in 2011 = 1358 days, 35% of Euratom effort of inspection)
- Send notifications before any international transfer of nuclear material (>3600 in 2011 FR)



The verification of these information is mainly carried out through routine inspection of the nuclear material in the facilities



Evolutions : unannounced, short-noticed, random inspections, audits



Chemical Weapons Convention's verification regime [OPCW]



CWC 1997

International Treaty forbidding chemical weapons and guaranteeing their elimination at a world level

= disarmament Treaty and non-proliferation Treaty

- It allows verifying the chemical weapons and manufacturing facilities destruction through inspections
- It guarantees the non proliferation of toxic chemicals entering the CW manufacturing by a verification regime applied to industry

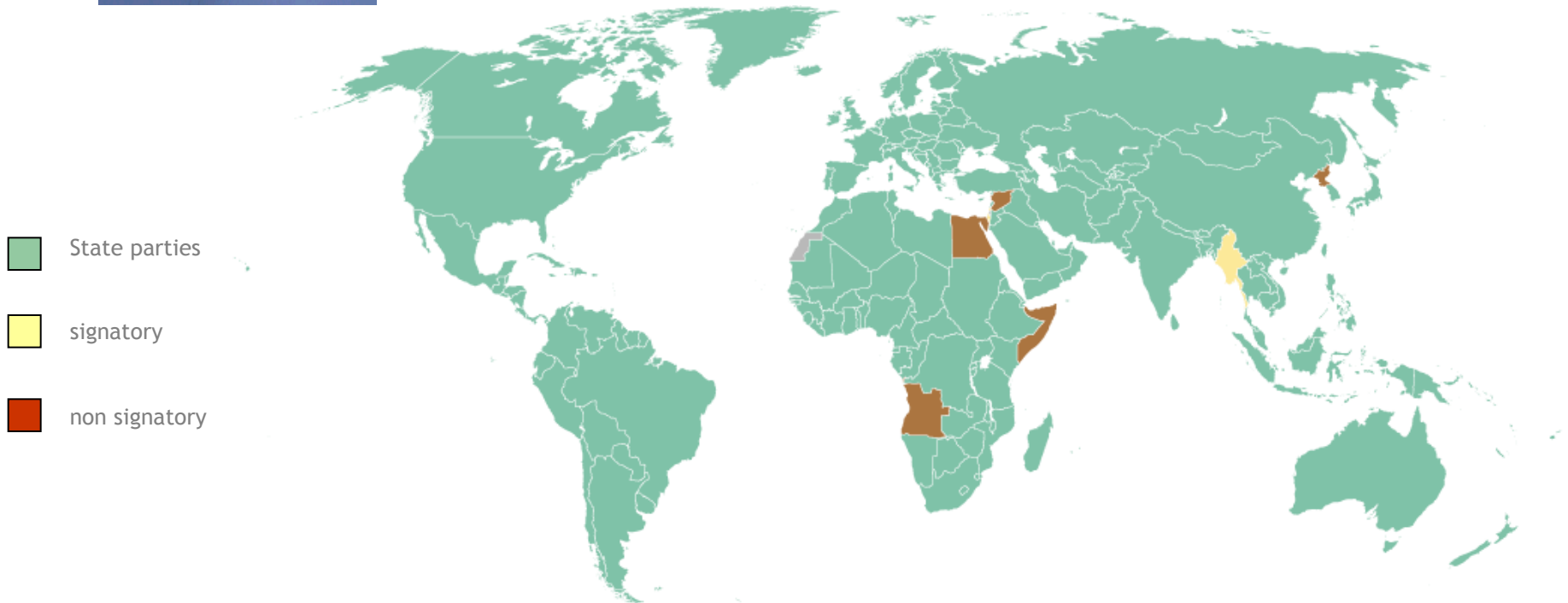
Headquarters in The Hague (NL)



MEMBER STATES



- 188 State parties
- 2 signatory state party : Israel, Myanmar
- 6 non-signatory state party : Angola, North Korea, Egypt, Somaly, Syria, South Soudan



DISARMAMENT

Chemical weapons owner states* having ratified the Convention :

* CW manufactured after 1925



- United States of America
- Russian Federation
- India
- Albania
- Lybia
- South Korea
- Irak

2305 inspections organized since 1997

> 70 declared CW manufacturing facilities out of use, 43 of which are destroyed and 21 reconverted (pharma)

> Stockpiles destruction : >65% achieved in 2012

NON-PROLIFERATION

Verification of authorized activities

DECLARATION by each SP :

activities led with chemicals sorted out in 4 categories



INSPECTION by the OPCW

at industrial sites (quantity thresholds, activities : manufacturing, processing, consumption)

Checking, frequency according to the risk (T1 > T2 > ... PCOD)

Credibility because short noticed



2 declarations campaigns per year
≈ 120 declared sites by France

110 « inspectable » sites,
Approx. 8 inspections per
year, 2 to 5 days each