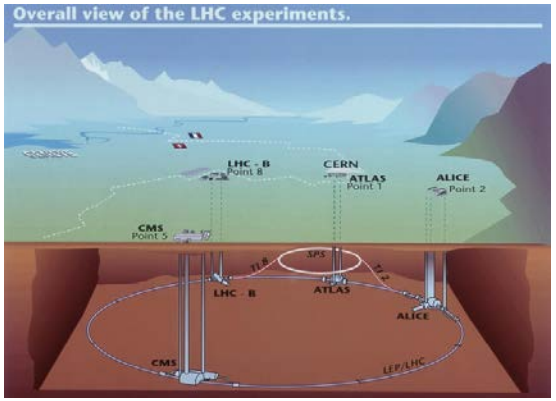
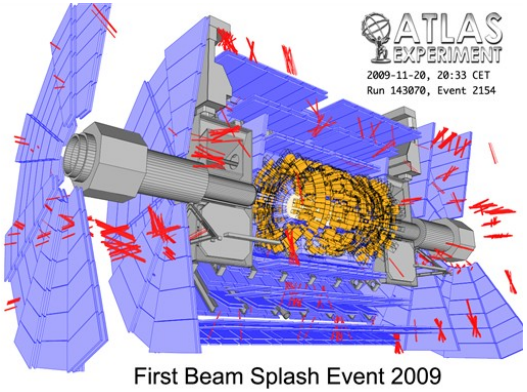
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

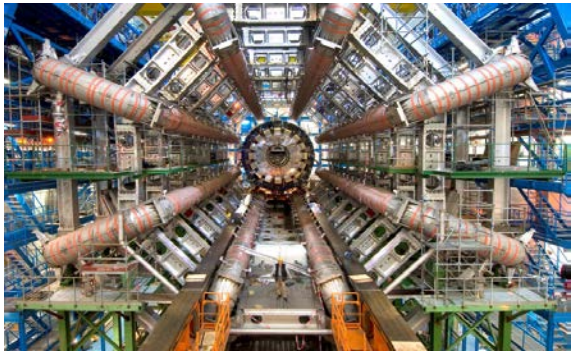
Federal Department of Home Affairs DHA
Federal Office of Public Health
Division Radiological protection

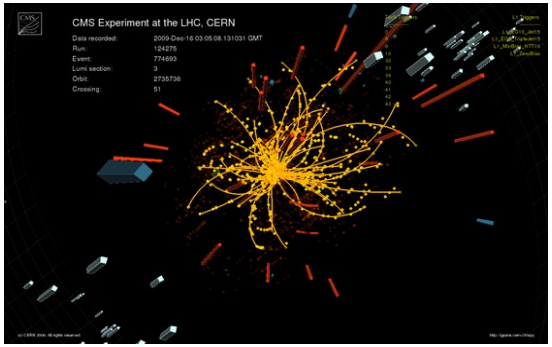
Protection against ionising radiation and Safety at CERN





First Beam Splash Event 2009





Dr N. Stritt, Division Radioprotection

Leader Section Research facilities and nuclear medicine

Legal framework

The tripartite agreement – 15th November 2010

ACCORD

ENTRE

LE CONSEIL FEDERAL SUISSE,

LE GOUVERNEMENT DE LA REPUBLIQUE FRANÇAISE,

ET

L'ORGANISATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE

relatif à la Protection contre les rayonnements ionisants et à la Sûreté des Installations de l'Organisation européenne pour la Recherche nucléaire

Fait à Genève, le 15 novembre 2010, en langue française, en trois exemplaires.

Pour le Conseil fédéral suisse	Pour le Gouvernement français	Pour l'Organisation
Pascal Strupler	André-Claude Lacoste	Rolf Heuer
Directeur de l'Office fédéral de santé publique	Président de l'Autorité de sûreté nucléaire	Directeur général

Legal frame: conventions and agreements

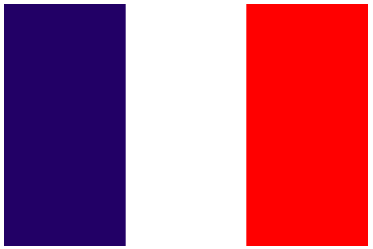
Convention Establishment of the CERN
European Organization for Nuclear Research
July 1st 1953, ratified by the 20 CERN Member States

Convention relating to the extension
of the CERN site into the French territory
13th September 1965
between the Swiss Federal Council and the French Government

Legal frame until 2010: conventions and agreements

- The Convention for the Establishment of CERN grants to CERN and its representatives the privileges and immunities usually granted to international organisations to the extent required for the fulfilment of their tasks
- Due to its status, CERN's rules apply on the CERN's site instead of the national legislation
- A collaboration was developed and authorisations were delivered mainly on the basis of necessary handling outside of CERN's site (import/export) and possible impact outside of CERN's site (environmental monitoring)
- Until 2010, different rules and modes of bilateral collaboration applied on the French and Swiss parts of the CERN's site

Legal frame until 2010: conventions and agreements



- **Agreement considering the legal status** of CERN in France
  13th September 1965

- **Convention on protection against ionising radiation**
  28th April 1972

- **Convention on the Safety of the facilities associated with the Large Hadron Collider (LHC) and the Super Proton Synchrotron (SPS)**
  11th July 2000

Legal frame until 2010: conventions and agreements

- **Agreement considering the legal status of CERN in Switzerland,**
  11th June 1955

- **Agreement on the collaboration regarding the protection against ionising radiation**
  8th September 1993

Tripartite agreement – 15th november 2010

The tripartite agreement was designed to:

- Replace the existing bilateral agreements
- Introduce a tripartite collaboration and a single regulatory framework for the whole of the CERN's site taking into account specific requirements
- Ensure that the best practice in matters of protection against ionising radiation and Safety applies to the CERN's facilities.

The tripartite agreement was signed on 15th November 2010 by CERN, the French Government and the Swiss Federal Council.

Delegation

The Host States are represented by their respective competent authorities in matters of protection against ionising radiation and Safety, namely the **French Autorité de Sûreté Nucléaire** and the **Swiss Office Fédéral de la Santé Publique**

Organisation of the collaboration: Tripartite meetings (I)

Tripartite meetings are organised at least twice a year or at the request of any one of the Parties (CERN, France and Switzerland representatives)

CERN submits to the authorities :

- for certification, the CERN rules
- for approbation, the methods of evaluation of:
  - Impact to the environment and people of scattered radiation and radioactive effluents
  - Impact on the personnel of prompt radiation and induced radioactivity

Organisation of the collaboration: Tripartite meetings (II)

The Parties define :

- accreditation procedure for the CERN dosimetry service
- procedures for the classification, declaration of significant events

The Parties approve the choice of waste disposal path

The Parties agree upon the annual programme of visits

The CERN responds to any observations or requests formulated by the Authorities in Tripartite Meetings

Organisation of the collaboration: Technical aspects

- **Request for expert evaluation**: At CERN's request, the Authorities may provide expert evaluations in specific matters relating to protection against ionising radiation and safety

- **Joint visits:** the Authorities consult each other and propose to the CERN dates for the visits and a programme setting the themes to be examined

- **A follow-up letter** is drawn up after each visit. Items noted by the Authorities during visits give rise to observations and requests

Organisation of the collaboration: Joint visits

- Organised by the French *Autorité de Sûreté Nucléaire* and the Swiss *Office Fédéral de la Santé Publique*

- Example of last adressed themes:
  - Radioactive sources and laboratories
  - Safety management
  - Planification of the Long Shutdown

- Follow-up letters suggest corrective actions, recommendations and present observations

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asn

Office fédéral de la Santé Publique OFSP — Division de Lyon

Département Fédéral de l'Intérieur DFI — République française

Monsieur le Directeur Général du CERN
CERN
1211 Genève
Suisse

Lyon, le 18.07.2012

Visite conjointe « Management de la sûreté et de la radioprotection » selon l'Accord tripartite du 16 septembre 2011.

Référence de l'inspection : INSSN-LYO-2011-0638 du 25 janvier 2012.

European Organization for Nuclear Research
Organisation européenne pour la recherche nucléaire

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AmtL | GP | KUV | OeG | VS | R | DM
DS | Bundesamt für Gesundheit | MT
DG | BioM
SpD | AS Chem
KOM | 24. Jan. 2013 | LMS
Kamp | Str
Int | 438.0014-6 | 2 | Chem
RM | P + O | I + S | GStr | MGP | Lst | AKV | AKV

Monsieur Grégoire Deyirmendjian - ASN
Monsieur Werner Zeller - OFSP

Our reference : DG/2013-009 — Geneva, 18 January 2013

Re : Visite conjointe « Management de la sûreté et de la radioprotection» selon l'Accord tripartite du 15 novembre 2010

Messieurs les Chefs de Division,

Dans le cadre de l'Accord du 15 novembre 2010 entre le Conseil Fédéral suisse, le Gouvernement de la République française et l'Organisation européenne pour la Recherche nucléaire relatif à la protection contre les rayonnements ionisants et à la Sûreté des installations de l'Organisation européenne pour la Recherche nucléaire une visite conjointe de l'Autorité de Sûreté nucléaire (ASN) et de l'Office Fédéral de la Santé Publique (OFSP) sur le thème du « Management de la sûreté et de la radioprotection » a eu lieu le 25 janvier 2012.

Lors de cette visite, les représentants des Organismes ont reçu l'entière collaboration des responsables CERN concernés.

Nous avons l'honneur de vous communiquer ci-après la réponse de l'Organisation aux principales recommandations et observations que vos services ont formulés à cette occasion.

CERN's obligations

Evaluation of the impact on:

- the environment and people of scattered radiation and radioactive effluents
- on the personnel of prompt radiation and induced radioactivity

Take necessary measures to keep this impact as low as reasonnable achievable

CERN immediately declares any significant event to the Authorities with reference to the International Nuclear Event Scale (INES)

CERN's obligations

CERN provides to the authorities:

- A waste plan
- Radioactive waste inventory
- Emergency plan
- the specific safety files for each facility
- Rules associated with the building/operation/dismantlement of each facility
- Impact study for building a new facility or dismantling an existing one
- Annual report on safety and protection against ionising radiation

The documentation is communicated to the Authorities at their request (except annual report, provided on a yearly basis)

CERN dosimetry service

- External exposure to all persons working on the CERN site who are likely to be exposed to ionising radiation measured by personal dosimeter
- Dosimetry measurements for internal exposure organised if needed
- The dosimetry service is accredited by the Authorities
- The dosimetry service provides the results of the individual dose-rate monitoring to the two Host States for recording in the national registers

Transportation of radioactive materials and waste

- Transportation of radioactive materials and waste between the CERN sites are undertaken in accordance with the european regulations applicable in the Host States governing the transportation of dangerous materials by road

- The Authorities grant CERN the special dispensations provided for by the ADR regulations to take its operating requirements and special technical characteristics into account

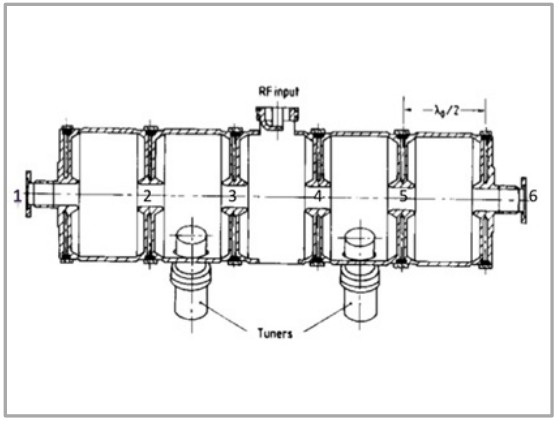
- The conditions of transportation of radioactive materials and waste are laid down in a CERN rule approved by the Authorities

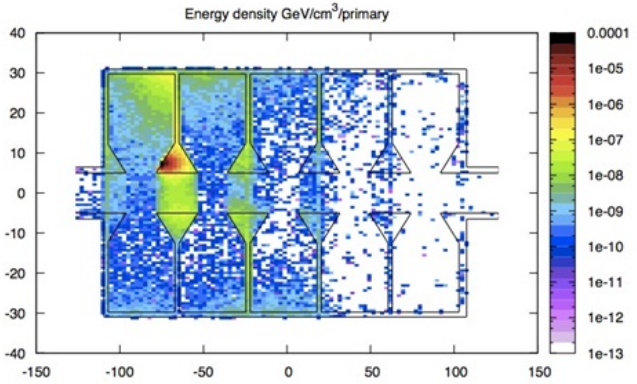
Radioactive waste, Article 7, tripartite agreement

- CERN Radioactive waste is disposed of by the Host States via the paths established in accordance with their national legislation
- The choice of disposal path is approved by the Parties after examination in tripartite meeting
- The CERN keeps a record of the radioactive waste disposed of in the Host States and an inventory of the radioactive waste present on its site
- CERN actually prepaing a «Waste study » covering the waste present on site and waste forseen in the future

First decision in the framework of the tripartite agreement

The fair distribution of CERN radioactive waste between France and Switzerland





Elaboration of guiding principles for a fair distribution of waste

The guiding principles were discussed and defined by CERN and the Host States during:

- one technical meeting of 31st May 2011

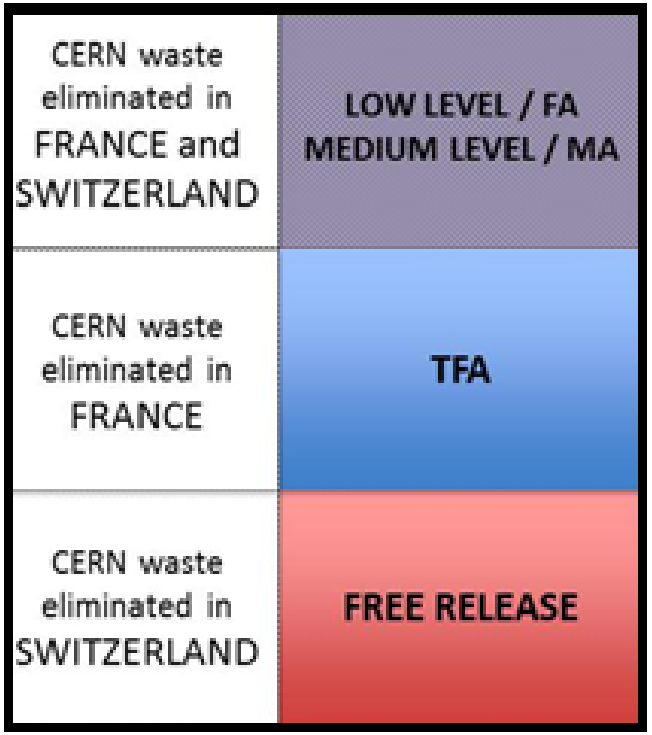
- three tripartite meetings
  - 8th June 2011
  - 4th November 2011
  - 9th March 2012

Guiding principle I : Radioactive waste disposal via existing paths

- The radioactive waste corresponding to the French classification FA (Faiblement Actif, Low Level) or MA (Moyennement Actifs, Medium Level) are disposed of in France or in Switzerland

- The radioactive corresponding to the French classification TFA (Très Faiblement Actif, Very Low Level) are disposed of in France

- The radioactive waste meeting the criteria for the Swiss « free-release » are disposed of in Switzerland.



Guiding principles II & III : fair distribution of radioactive waste and factors

For each category of eliminated radioactive waste, the weighted sum per batch takes into account

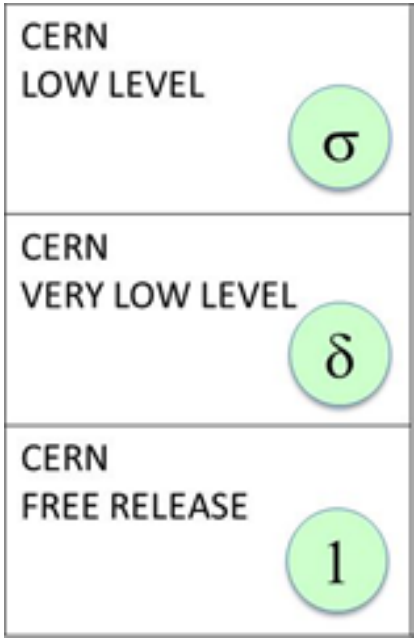
- mass m_i of eliminated waste, independently of the physical state of the waste and of a possible preconditioning
- specific activity $A_{r,i}$ of radionuclide *r* of batch *i*
- toxicity of the waste (weighting factors), calculated according to the French values IRAS (Indice Radiologique d'Acceptation en Stockage, Radiological Index of Acceptance in Storage) and SE (Seuils d'Enrobage, Coating Thresholds) and Swiss LE (Limite d'Exemption, Exemption Limit) for each nuclide

Guiding principle III : definition of the weighting factors

The weighting factors have been defined on the basis of the mean of the ratios between the values LE, IRAS and SE of the most present radionuclides in CERN radioactive waste.

Radionuclide	IRAS/LE	SE/LE
^{22}Na	3.3	6.7×10^3
^{60}Co	10	3.7×10^3
^{55}Fe	33	1.2×10^3
	$\delta = 10$	$\sigma = 10^4$

Guiding principle III : Calculation of the fair distribution



$$S_{FA/MA} = \sigma \sum_i m_i \sum_r \frac{A_{r,i}}{\lim\_FA/MA_r}$$

$$S_{TFA} = \delta \sum_i m_i \sum_r \frac{A_{r,i}}{\lim\_TFA_r}$$

$$S_{FRR} = 1 \sum_i m_i \sum_r \frac{A_{r,i}}{\lim\_FRR_r}$$

Guiding principle IV : Annual balance - Adjustments

- A balance-sheet highlighting the annual values of eliminated waste per category is drawn up and presented every year by CERN at a tripartite meeting

- The control of the effective fair distribution of the eliminated waste is done over a period of three years.

- Ajustments can be agreed upon at a tripartite meeting depending on the balance-sheet of the already eliminated waste and on regulatory changes in the Host States

Resume

- New tripartite agreement signed in 2010 by CERN, Swiss gouvernement and French gouvernement
- Tripartite Meetings
- Technicals meetings
- Visit / Audits for regulatory body
- Decision (waste, transport, etc.)
- Not standard approach but good collaboration

Tank you for your attention

$$S_{TFA} = \delta \sum_i m_i \sum_r \frac{A_{r,i}}{\text{lim\_TFA}_r}$$