



General Safety

(Safety engineering and Environmental protection)

E. Cennini on behalf of the HSE-SEE Group

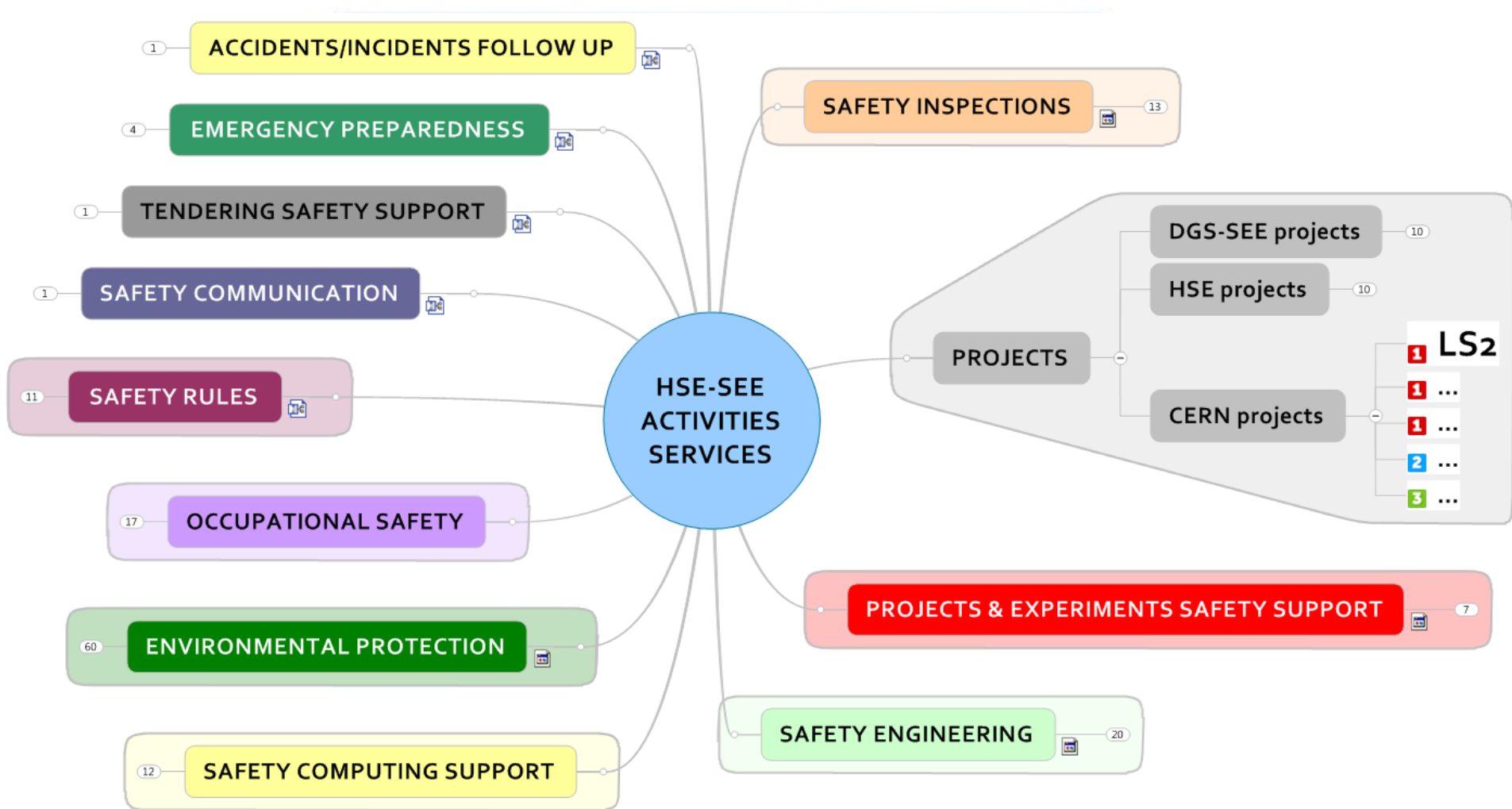


LS2
Days

7th & 8th November 2016

<http://indico.cern.ch/event/564604/>

HSE-SEE Mission and activities



Scope: Safety inspections for buildings and for mechanical (pressure and lifting equipment, machine tools, safety valves) and electrical installation.



Expected before LS2:

- **Provide** us with all new buildings/equipment/installations in order to prepare the inspection planning.
- **Provide** us with all available safety valves and pressure vessels for requalification in order to prepare the planning.
- **Inform** us of end of works in order to plan and launch general safety inspections.
- **Check and make compliant** workshops and machine tools to be used during LS2.

Expected during LS2:

- **Keep us informed** (*to foresee resources for receptions and periodical inspections as early as possible and to manage urgent requests*)
- **Make available** complete folders for equipment (*declaration of compliance, instruction manual, manufacturer's instructions*) / electrical installations (*list of all documents to be provided for electrical receptions:*
<https://edms.cern.ch/document/1212097/1>)



Expected after LS2:

- List of buildings/equipment/installations with access constraints in order to update the periodical planning.
- NB: when the periodical inspection date cannot be set, a derogation request must be made to HSE-SEE-XP asap

Resources

Based on LS1 lessons learnt, resources for LS2 have been foreseen (including the “known unknown”), for the unknown funding will be required.

Scope of the PESS activity

To assist Projects and Experiments in the integration of all Safety aspects at the earliest stage of any projects or experiments. Identify applicable prescriptions and provide support in their implementation



PESS activity at present

- 119 active projects
- 278 followed since 2010
- 25 HSE correspondents (average of 4-5 projects per correspondent)
- Already actively involved in LS2 related projects in which our contribution was requested via PLAN, e.g: LIU, East Area Renovation, SPS Fire Consolidation, ...

Expected before/during LS2:

- **Declare** in PLAN your activities in order to allocate resources for the assistance.

Resources:

- A re-organization is currently on going to be able to face LS2 needs...
- ... not all projects will be followed (priority setting)

TENDERING SAFETY SUPPORT



Scope

Check the integration of Safety in calls for tender. Advise and propose technical solutions in the domains linked to Safety in the tenders.

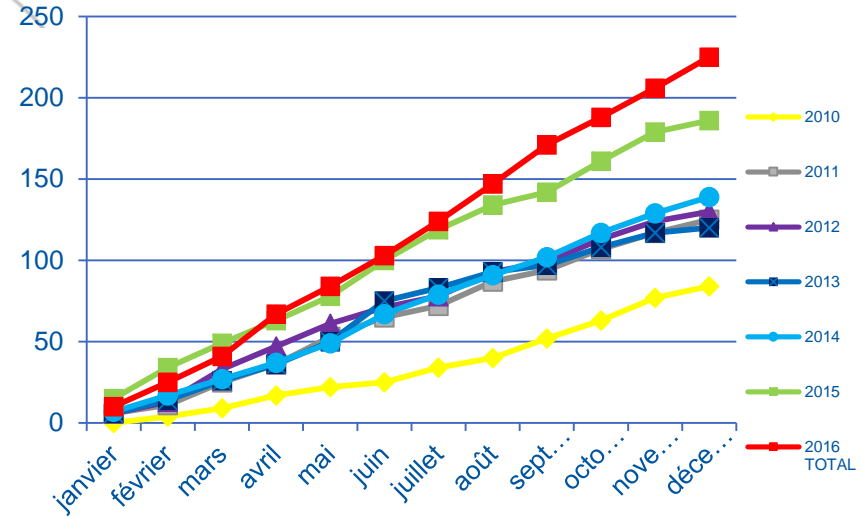
Expected for LS2 and non LS2 activities:

- Consultation of HSE unit compulsory
- Response time within 7 working days
- Participation to specification committees

Resources:

- No additional resources possible : necessary to ANTICIPATE !
- Necessary to ANTICIPATE to avoid delays in the replies!

Summary of call for tenders checked





Expected for LS2 : Context and implication

The CERN Safety Rule SR-WS governs the conditions for Safety Coordination on CERN's sites. SR-WS states that CERN :

- is responsible for its sites,
- must manage Safety on its sites,
- must manage Safety linked to works and services on its sites,
- And therefore must coordinate its operations between stakeholders.

LS2 is a specific « operation » and is classified as:

For the "complex*": as a technical stop

For non-complex parts: as category 1 or 2.

During LS2, Safety coordination involves an ad hoc organisation.

It is therefore important to know the scope of the operation for the complexes (underground areas AND surface areas where necessary).

* Complex: a set of beam and associated experimental facilities; the CERN Complexes are the LHC, SPS and PS. [CERN SR-WS]



Expected for LS2 : Principles and HSE-SEE Support

Principles of Safety Coordination for CERN complexes

- Anticipate, plan, declare, evaluate
- Safety integrated in different meetings (Coordination, WPA,...)
- Organic unit responsible for the coordination of the stop
- A Safety support team to assist during the stop
- One basic document as a reminder of the key Safety requirements (PCTS)
- Prior declaration (IMPACT) for each intervention one Safety "evaluation" document per intervening entity (procedure, task list, or equivalent...)
- VIC if requested/necessary – piloted and minutes written by each works' supervisor

HSE-SEE support before/during LS2 (worksite)

- "Classroom" training for work/service supervisors (available in June 2017)
- Publication of various accompanying documents (IMPACT, VIC, WS guideline...)
- In category 2: assistance with the drafting of a prevention plan, VICs,
- Etc...

In category 1, Safety support is ensured by the mandatory presence of a Safety Coordinator for category 1 operations (SSI-WS-1-1)

Scope

Identify and evaluate materials likely to contain asbestos, define the asbestos consolidation works. Accompany the Departments for their works where asbestos is likely to be found (diagnosis and follow-up of worksites). Train and inform the people concerned at CERN with regards to the risk of asbestos.

Expected for LS2 :

- Need to anticipate
- Avoid last minutes requests

Resources:

- HSE-SEE team (1,5 FTE)
- Delays might occur in case of last minutes requests
- Additional resources might be required and funded



Scope

Assist and advise the Departments and Experiments in their consideration of noise risks.

Expected for LS2:

- New installations with noise impacts on environment
- Anticipate problems with computing simulations (today done by HSE's contractor and as from 2018 will be partly done by HSE-SEE)

Resources:

- HSE-SEE team (1,5 FTE)
- Delays might occur in case of last minutes requests
- Additional resources might be required and funded

EMERGENCY PREPAREDNESS



Scope

Assist the Departments in emergency preparedness, in particular with the reception of level 3 alarms and the provision of necessary elements for emergency evacuations.

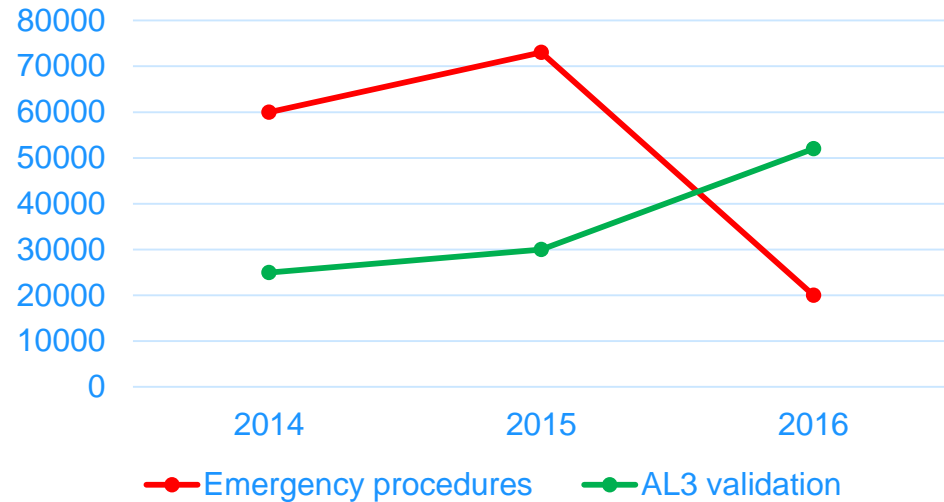
Expected for LS2:

- Specify or revise emergency procedures
- List new AL3 to be validated
- Testing Safety functions of new TETRAs

Resources:

- Resource needs are dependent on number of new installations

Covered surface (m²)





Scope :

Drill with host states services: scenario involving CERN (9 fire-fighters) and host states emergency services (around 50 fire-fighters) in a realistic medium cross border scenario.



Context:

- New CERN tripartite agreement between CERN-CH-FR (signed in 2016)
- Host states emergency services collaboration (huge turn-over in CH and F)
- Test in real condition : put theoretical approach in practice under credible conditions
- Outcome of existing collaboration : joint visits, table-top training, surface building training.
- CERN Crisis management procedures to challenge and improve.

Request to LS2 project management :

- Approve the drill (now)
- If approved, decide the date and the location (ideally between FR and CH) 1 year before
- No access during 14 hours for the scenario foreseen (4 hours before to prepare, 8 hours for the drill, 2 hours for clearance)



Scope

The Safety engineers answer any question from the CERN community on their respective safety domain, provide/check calculations, risk mitigation measures and trigger the revision of regulatory framework.

For following activities don't forget to ask for HSE-SEE check and/or clearance.

Chemical:

- Change in the already implemented risk mitigation measures for the use of chemicals;
- Change of gas;
- Use of flammable gas;
- Any activity considered major Safety implication as defined in the Chemical Safety rule (SR-C)

Ionising radiation in the environment:

- Civil engineering, especially around areas with potentially activated rock or earth;
- Changes of the air and water release points;
- New constructions close to the existing release points;
- Change of the ventilation flows or operation modes (with respect to the quantity of releases, not for the controls);
- Change of the existing mitigation measures.



For following activities don't forget to ask for HSE-SEE check and/or clearance.

Electrical:

- Purchasing/use/change equipment in a way that is not compliant with rules and standards;
- Installation of special electrical equipment in areas that were not designed for it;
- Changes in electrical safe network (e.g. Diesel, UPS, 48V, ...);
- For prototype/development/experiment installations that require special commissioning procedures;
- The as-built electrical documentation shall be updated with all the modifications in the electrical installations performed.

Structural:

- New structures that are not covered by the EU regulations or construction codes;
- New structures with special design or structures where a design process review is needed;
- Changes of the existing structures that could have an impact on Safety;
- Activities where there is already a structural risk (e.g. parts in the BAs,...)



For following activities don't forget to ask for HSE-SEE check and/or clearance.

Fire:

- Use of “exotic” materials (e.g. with difficulties respect IS41 or IS23, ...);
- Change of the evacuation path or fire resistance of a building/equipment;
- Impact on the already implemented risk mitigation measures;
- Renovation of buildings for which there is not yet a study of the fire safety improvements needed;
- Considerable increase of Fire Load, or change in the Fire Load configuration or properties;
- Temporary storage of considerable amount of combustible materials and waste in non-designated areas (e.g. Underground, shafts, ...)

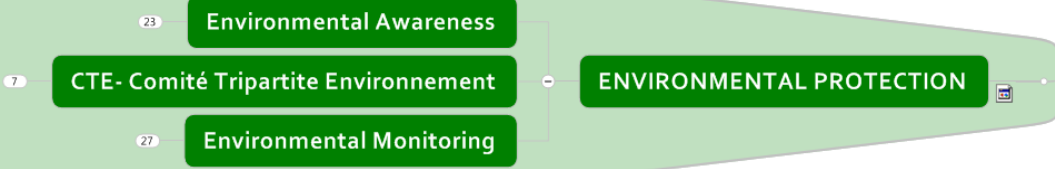
Mechanical:

- Cryogenic, vacuum and lifting equipment designed at CERN;
- Design of new ventilation systems for RP-classified areas or changes of the existing ventilation systems for RP-classified areas;
- Any activity or equipment considered as having major Safety implication as defined in the Mechanical Safety rule (SR-M).



Resources

- Revision ongoing with the groups having requested our contribution, but a lot of groups didn't yet. Moreover a lot of activities from the HL-LHC project and the experiments are not yet included
- Resources needed to enter the activities in the BAs that will request our contribution for the structural analyses (in the last YETS, this took a considerable percentage of time for our unique civil engineer).
- A considerable amount of the activities for which we confirmed our contribution is based on Fellows, so if the fellow position is not kept, we will not be able to assure the contribution.



Scope

To monitor the impact of the Organization's activities on the local environment and to report the results to the CERN Management, public and the Host States Authorities. To provide support in the protection of the public and environment against ionizing radiation and in conventional environmental issues.



HSE/SEE-EN Environmental monitoring programme

- Stray Radiation Monitoring Station
Station de surveillance du rayonnement diffusé
- Ventilation Monitoring Station
Station de surveillance de la ventilation
- Noxious gases monitoring station
Station de surveillance des gaz nocifs
- Environmental Aerosol Sampler
Echantillonneur d'aérosols environnemental
- Water Monitoring Station
Station de surveillance de l'eau
- Anemometer
Anémomètre
- Pluviometer and Rainwater Sampler
Pluviomètre et collecteur de pluie

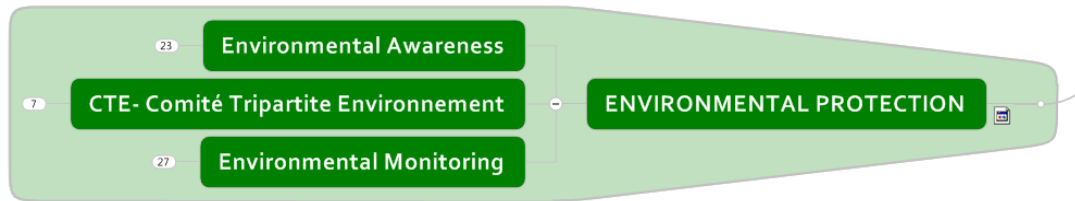
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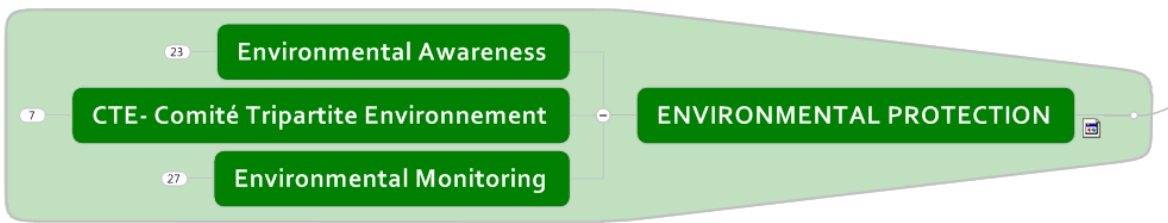
Critical issues:

- Emissions of GHGs due to maintenance or tests;
- Discharge of polluted water from civil-engineering worksites or purging of CERN water circuits;
- Usage/handling/temporary storage of liquid chemicals for maintenance activities or on civil-engineering worksites;
- Various non-radioactive waste production – sorting and removal from CERN sites;
- Emissions of noise from civil-engineering worksites or new CERN facilities.

Lessons learned from LS1: **beware when restarting operations !**

Expected for LS2:

- Personnel/contractors are qualified and trained;
- Water/Soil/Noise pollution prevention measures are taken - seek HSE advice whenever needed (environment.info@cern.ch);
- For planned water releases – let them be checked by HSE before, if relevant (potential presence of pollutants): CERN Service Portal - **Water Release Service**;
- Information about CERN non-radioactive waste sorting and collection is communicated.



Resources:

HSE/SEE-EN Environmental monitoring programme, focussing on radiological and physico-chemical parameters will work permanently, as during accelerator operation.

In case of incident/accident:

- In case of accidental spill of liquid chemicals – for major cases, dial **74444** – for minor cases, inform **A. Dziewa & S. Kleiner (HSE/SEE-EN)**;
- In case of incident/accident (e.g. leak of C_4F_{10} , spill of acid) – events shall be systematically documented through an internal accident report (A2 form).

Conclusion

By responding to the above expectations you will contribute to Safety prevention and fulfil your Safety duties and responsibilities.

Thank You for your attention

Questions?

Rôle des superviseurs de travaux/prestations

en matière de Sécurité

- Dans le cadre de la **préparation** de travaux et prestations, **anticiper** autant que possible **les problématiques** de Sécurité liées aux phases d'exécution et aux coactivités prévisibles ;
- Prendre en compte et **faire appliquer les dispositions pertinentes** des documents de Sécurité génériques applicables au contractant supervisé (p.e. WoCS, Plan de prévention, PCTS, etc...) ;
- **Déclarer à l'avance** les travaux et prestations qui le nécessitent (via l'outil IMPACT pour les opérations de 2^{ème} catégorie et arrêt technique) ;
- Pour les opérations de 2^{ème} catégorie et arrêt technique, et lorsque nécessaire, **réaliser les visites d'inspection commune, rédiger et diffuser** les compte-rendu (via l'outil IMPACT) ;
- Prendre en compte et **faire appliquer** toutes les dispositions mentionnées dans les compte-rendu d'inspections communes qui lui seraient **assignés** (cas des **VIC** réalisées par un tiers) ;
- **Assurer une surveillance régulière** des travaux et prestations dont il a la charge ;
- **Faire corriger tout écart** aux prescriptions de Sécurité définies, **arrêter toute activité** en cas de danger grave et imminent, et communiquer par écrit auprès du chef de projet/responsable CERN du contrat.

Ne pas confondre rôle «chef de projet/contrat» et «superviseur de travaux/prestations»

