Experiencias en la gestión de incidentes con chatarra contaminada en las industrias Españolas

Experiences in Management of incident with Contaminated Scrap Metal in Spanish Industries

February 2009

Carlos Sánchez – UNESID / Riva Group Spain

Presentation structure:

- **Case 1.-**

Contingency management of a Cs source melting

Place: Alcalá de Guadaíra, Sevilla (Spain)

Company: Siderúrgica Sevillana, S. A

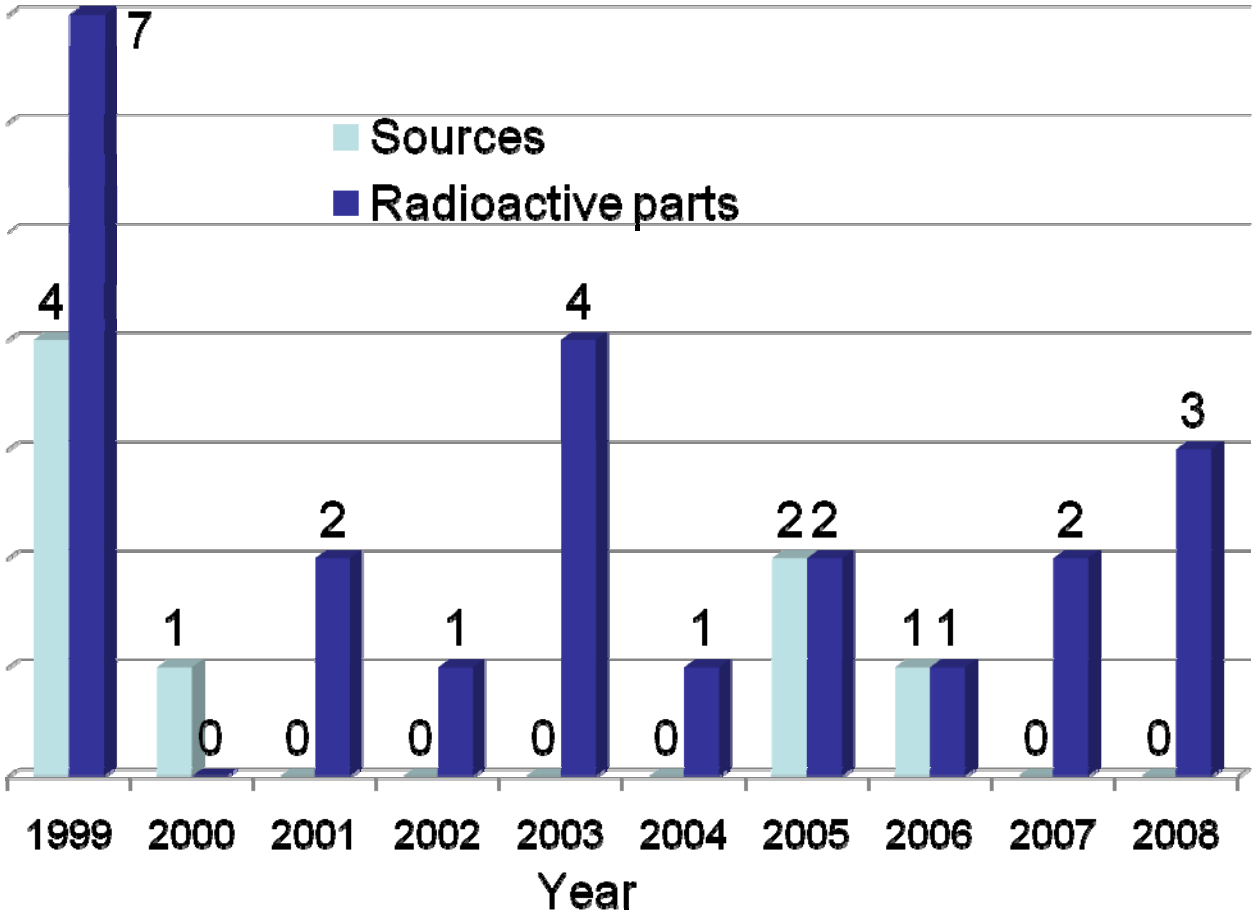
- **Case 2**.- Video presentation

Contingency management of a Cs source fragmentation.

Place: San Andrés de los Tacones, Gijón (Spain)

Company: Daniel González Riestra S.L.

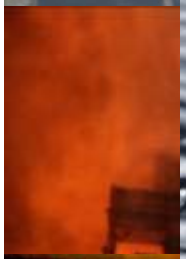
Evolution of detections in Siderúrgica Sevillana, S. A.

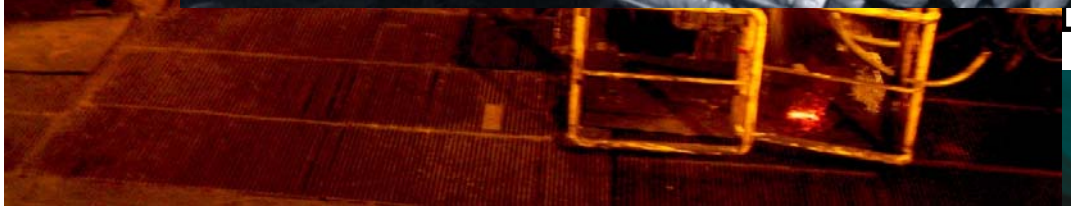


Contingency summary in Siderúrgica Sevillana, S. A. (1)

- Date: 07th December 2001
- Company subscribed to the *Protocol for Collaboration on the Radiation Monitoring of Metallic Materials*. Compromise: operate and maintain a surveillance and control system, with Radiation Portal Monitor, spectrometric control of steel probe and specialized technical personnel.
- Source activity: Between 3 and 4 Curios (Ci) roughly.
- Total volume of generated waste: 340 m^3
- For the cleanup operations it was engaged an authorized company with professional exposed personnel, supervised by a Technical Radiological Protection Unit (UTPR), according to in force regulation.
- Shutdown period for decontamination: 30 days.

Ciclo del Acero





Chatarra y parque de chatarra

Contingency summary in Siderúrgica Sevillana, S. A. (1)

- Date: 07th December 2001
- Company subscribed to the *Protocol for Collaboration on the Radiation Monitoring of Metallic Materials*. Compromise: operate and maintain a surveillance and control system, with Radiation Portal Monitor, spectrometric control of steel probe and specialized technical personnel.
- Source activity: Between 3 and 4 Curios (Ci) roughly.
- Total volume of generated waste: 340 m^3
- For the cleanup operations it was engaged an authorized company with professional exposed personnel, supervised by a Technical Radiological Protection Unit (UTPR), according to in force regulation.
- Shutdown period for decontamination: 30 days.

Contingency summary in Siderúrgica Sevillana, S. A. (2)

- Exemption limits set by the regulatory body (CSN)
  - Dose rate: 1 μSv/h
  - Surface contamination: 4 Bq/cm^2
  - Activity concentration: 10 Bq/g
- No facility personnel contact contamination or consumption. maximum dose per worker <<<1 mSv/year.
- No atmosphere contamination.
- Contingency total accounted cost rises to 3 millions €, including facility decontamination and produced waste management. *(Activity cease cost not include)*

Crisis management on the 7/12/2001

Situation totally new and unknown to the company.

Need to make decisions very quickly about unusual matters.

The worst time of the company's existence.

Brought about the beginning of a new era of great improvements.

Crisis management on 7/12/2001

FIRST: Thanks to all the people who collaborated without a break on the resolution of the contingency.

Thanks to:

- CSN Nuclear Safety Council
- ENRESA Empresa Nacional de Residuos Radiactivos
- PROINSA Authorized UTPR by the CSN
- CESPA Qualified personnel assistance

Crisis management principles on 7/12/2001

1.- to Know what's happening, to RATIFICATE the incident:

Needs:

- Suitable Surveillance System
- Correct Interpretation of the information
- External expert help

Crisis management on 7/12/2001

2.- to Know the MAGNITUDE of the incident:

- Afected areas
- To inform
- Weigth up the situation and engage the necesary resources
- Introduce protection measures
- Stop the exit of waste from the steelmaking process.

3.- to ISOLATE the afected areas to avoid unnecesary risks.

4.- Decontamination, CLEANUP in the shortest time possible.

Analisys of possible causes of the contingence on 7/12/2001

- Surveillance system failure (checked this didn´t happen)
- Inadequate surveillance system (checked the suitability of the compulsory surveillance equipment)
- Not attended alarms (checked that no other alarms did occurred)
- The melting occurred during the cleanup of a scrap stock yard, therefore the source might have been at the back of the yard for an undetermined period of time.

→ – Radioactive source was in the stock when the surveillance system was implemented in 1999.

Problems with the Initial Surveillance System. Evolution

- Protocol initially didn't foresee the installation of a control system for the exhaust gases in the facility. It considered detectable the Cs in the steel casting probe.
- Company installed voluntarily and in an experimental way, a exhaust gas sensor purchased in the market. The first level alarm comes fixed by the supplier in 50 mSv/h
- This sensor warned the company about the melting.
- After the event, it has been substituted by a more efficient equipment with double sensor that warns above 1 μSv/h.
- The spectrometric analysis in the steel probe doesn't produce a significant increase of the activity (<0,1 Bq/g).
- The surveillance system have been strengthen with a scrap redundant control during the basket charge before being moved to the furnace. Advantage: it's able to control less amount of scrap (truck <25 t, octopus crane <8t).

UNESID
Unión de Empresas Siderúrgicas

Final considerations from our experience about the SP Protocol

- Spanish Protocol has demonstrated its ability to adapt unexpected situations.
- After the experiences the compile knowledge has reduced the “unexpected” situations.
- Our company has had the ability to analyze the problematic of these inadvertent materials on equal footage with the administration, which gives a rather proactive environment.
- Spanish iron steel covered by the Protocol offers an add value due to their guaranteed radioactivity security.

Thanks for your attention