



GIP sources HA

WM Symposia 2013

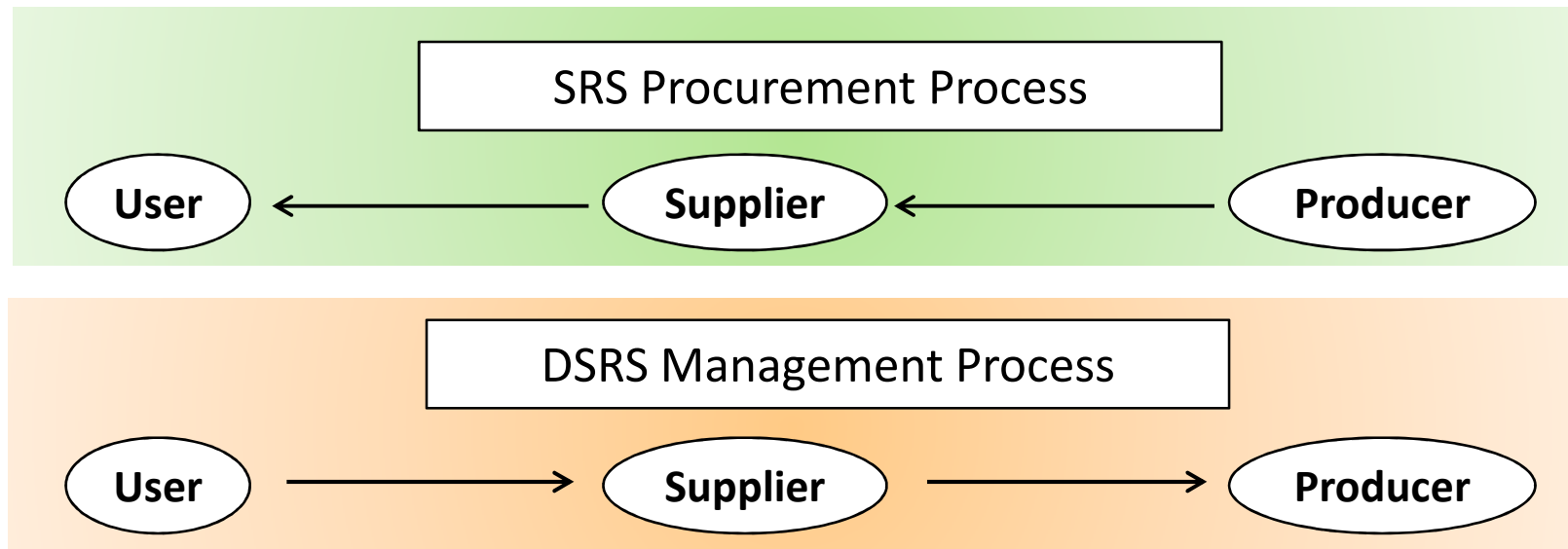


Panel Session 67:

IAEA Special Session on the World wide management of Disused Sealed Radioactive Sources

SRS & DSRS processes

- The Management of DSRS was first regulated in France in 1990, as a reverse process of the supply chain:



Management of DSRS after return to supplier

Management of DSRS as radioactive material

- Return to supplier or producer
- Reuse
- Recycling (by a producer)
- Interim storage before a decision is taken or a process is available

Import and
Export are
possible

Management of DSRS as radioactive waste

- Interim storage before processing is available
- Waste package processing
- Waste package storage
- Waste package disposal

Import is
forbidden



DSRS characteristics for management as waste

- Management of DSRS as radioactive waste requires:
 - A national strategy for waste management
 - A specific strategy for DSRS Management
- DSRS have specific characteristics:
 - Attractiveness
 - Concentration of activity, which requires:
 - Radiological protection (lead, DU, cement)
 - Specific characterization process
- Very High Activity DSRS may remain dangerous after a long period of storage or disposal



PNGMDR

- In France, a national strategy for waste management is required by law and expressed through the PNGMDR (plan national de gestion des matières et déchets radioactifs) :

National roadmap for the management of nuclear material and radioactive waste.

- PNGMDR is reviewed every 3 years, and prepared by working groups largely opened to all stakeholders
- PNGMDR includes a specific development on the management of DSRS

Existing or planned ANDRA final disposal facilities:

Waste Activity \ half-life	Short half-life (\leq Cs 137)	Long half-life ($>$ Cs 137)
Very Low Level (VLL)	Surface disposal (CSTFA)	
Low Level (LL)	Surface disposal (CSFMA) except some tritiated waste and some sealed sources	Dedicated sub-surface Facility under study (FAVL)
Intermediate Level (IL)		Ongoing studies, including disposal in deep geological Repository (MAVL-HAVL)
High Level (HL)		

Simplified criteria for acceptance of DSRS in final disposal

	ANDRA Disposal Sites	DSRS Criteria
VLL	CSTFA – Morvilliers	No activity (1 Bq) after 30 years
LL	CSFMA – Soulaines (*)	Low activity after 300 years (Detailed criteria are available)
IL	Subsurface – FAVL	Low activity after 500 years
HL	Geological – Bure – MAVL / HAVL	All other DSRS

(*) Tritium DSRS will need a long interim storage due to very low acceptance criteria in CSFMA

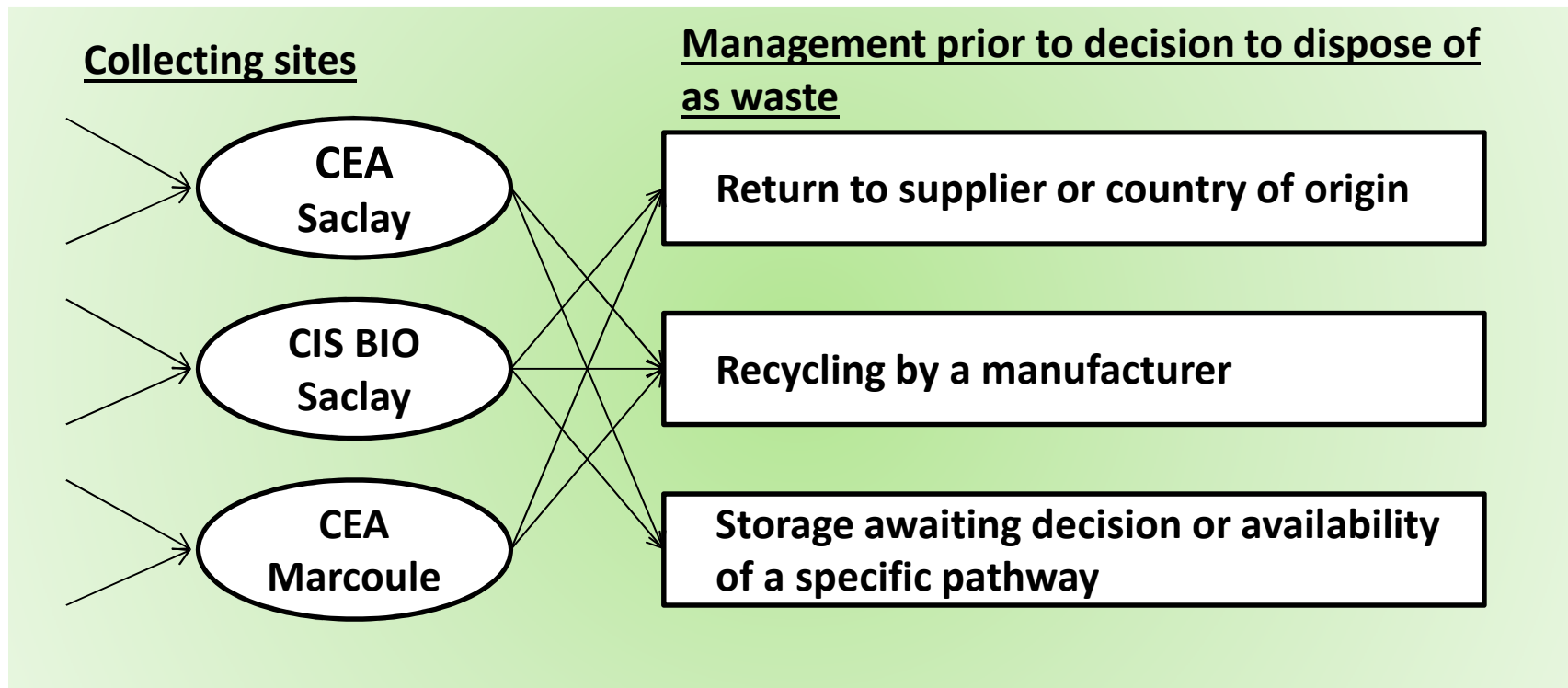


CEA and GIP sources HA strategy (1)

- During many years, CEA and CISBIO were the principal producers and suppliers of SRS in France, and have the responsibility for collection and management of these DSRS
- Since 2009, CEA and CISBIO cooperate on this task through a public interest group, the GIP Sources HA.
- Due to limited storage capacities, and to security and safety concerns, indefinite interim storage of collected DSRS is not a solution: each DSRS must be eliminated.
- DSRS management strategy requires a transport strategy in support.

CEA & GIP strategy (2)

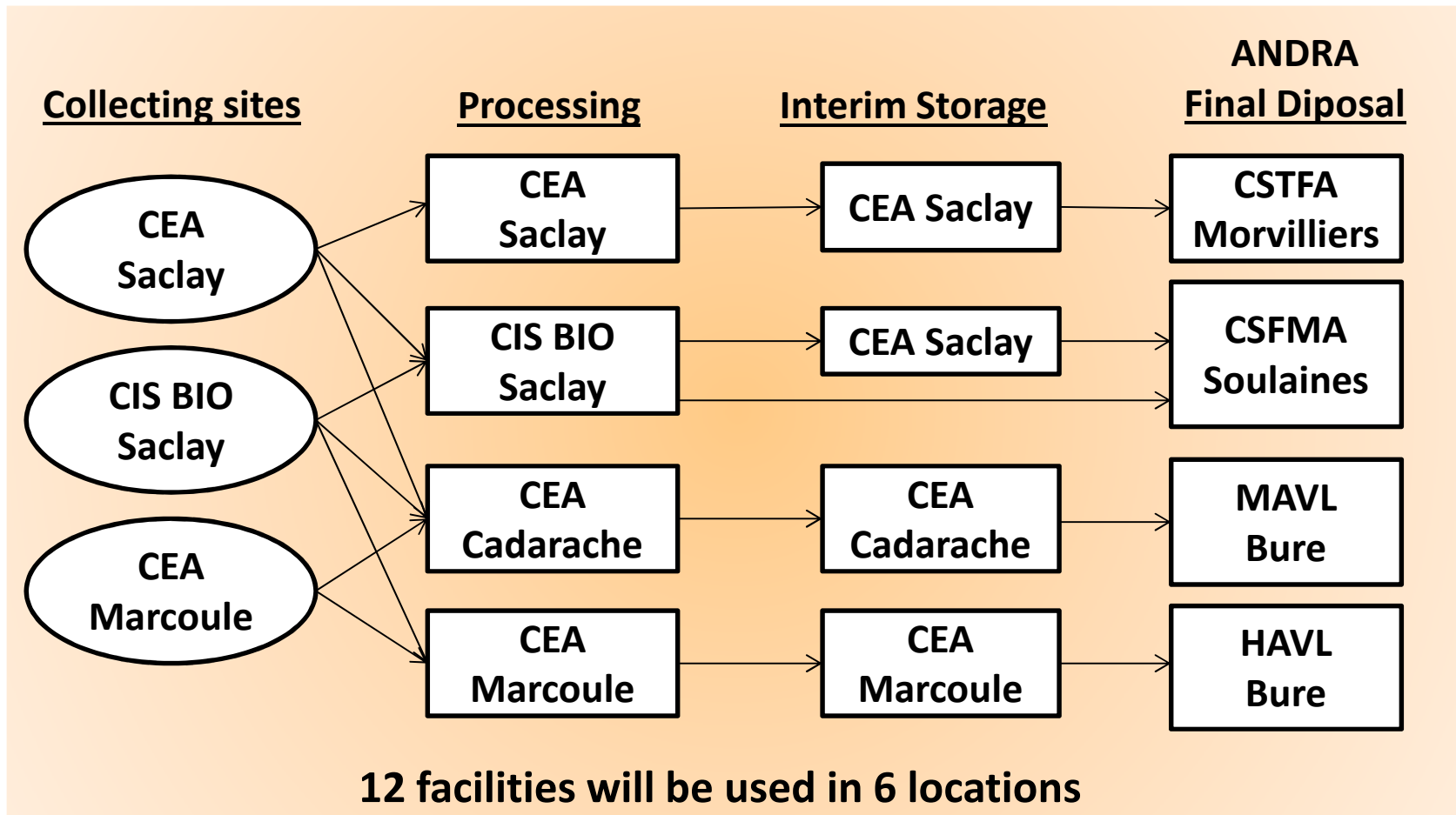
Major pathways for the management of DSRS as radioactive material (potentially reusable)



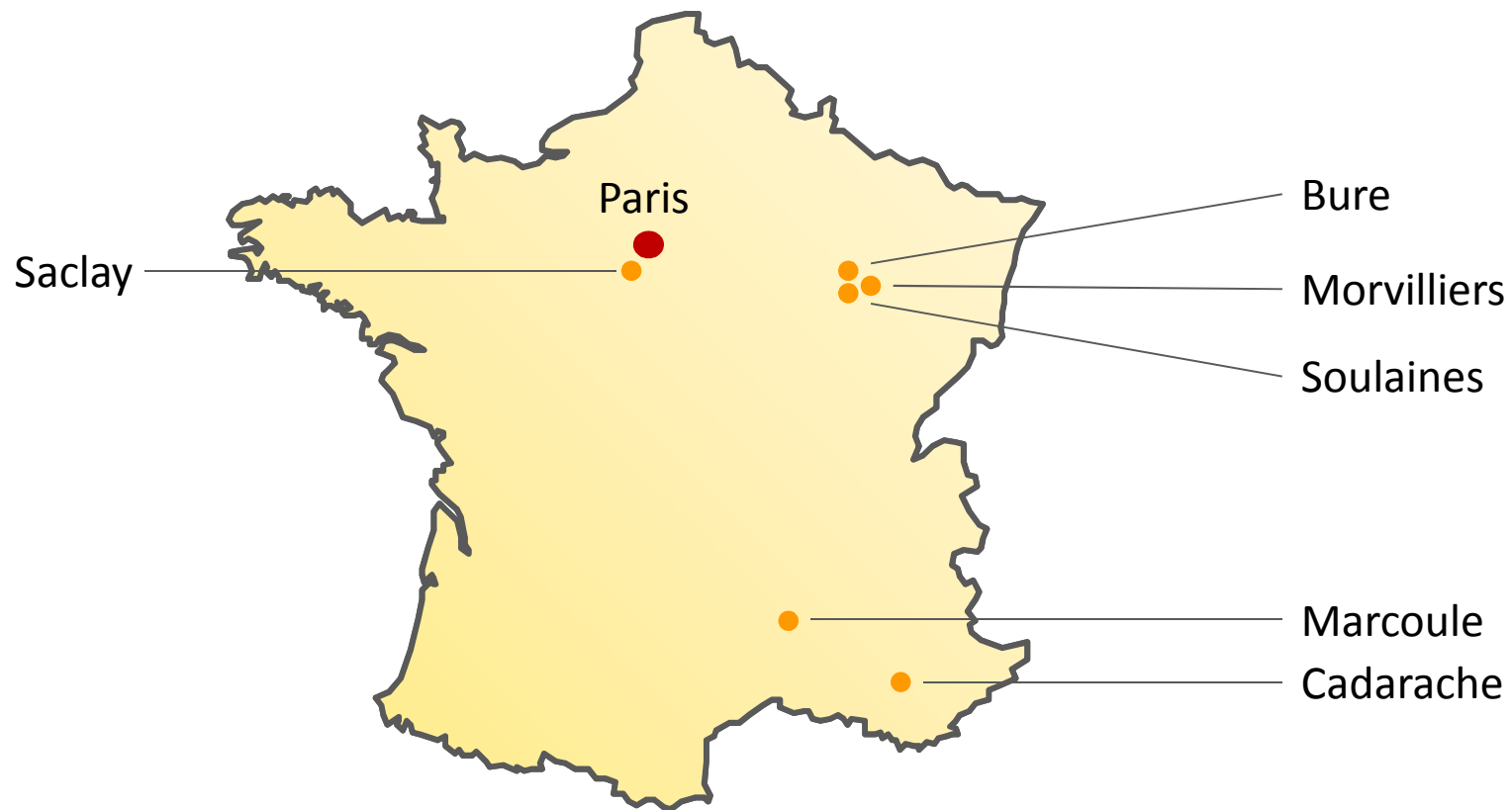


CEA & GIP strategy (3)

Major pathways for DSRS after decision to handle them as waste



Location of nuclear facility used for the management of DSRS
Many transports will be needed



Disposal		Sources to be managed		Waste Package	Total Volume (m ³)
		Number	Activity (TBq)		
CSTFA	Surface disposal	700	0	1 m ³ Metallic basket	4 m ³
CSFMA	Surface disposal < 120 watts / package	10 000	30 000	5 m ³ Cement package	200 m ³
MAVL	Geological disposal < 10 watts / package	400 000* + 6 000	1 000	1 m ³ Cement package	160 m ³
HAVL	Geological disposal < 200 watts / package	6 000	12 000	0,2 m ³ Metallic drum	1 m ³

* 400 000 Americium-241 smoke detector DSRS



Conclusions

- Export for **return to supplier or return to country of origin** is sometimes the only practical solution and sometimes the best solution
- **Recycling by present producers is the best solution, whenever available and affordable**
- **The criteria for acceptance of DSRS in ANDRA final disposal have been clarified, and will be completed by more precise specifications**
- **This opens the way for the creation of practical processes for the management of DSRS in radioactive waste packages in France**
- The management of DSRS is in any case **expensive** and is often underestimated by SRS users
- **Difficult transport issues have to be solved**, due to the fact that the life of SRS and devices is much longer than that of transport agreements
- **Safe and secure interim storage is a necessary first step in any DSRS management strategy**