

The Information System on Occupational Exposure and the ISOE Occupational Exposure Database

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ISOE Background and Objective

- Created in 1992 by OECD/NEA as a forum for RP experts from **utilities** and **regulatory authorities** world-wide to share **amongst participants** dose reduction information & coordinate projects to **improve** optimisation of worker radiological protection at NPPs
 - Promoted and sponsored by NEA and IAEA
 - Four ISOE technical centres support local members (Asia, Europe, North America, IAEA)

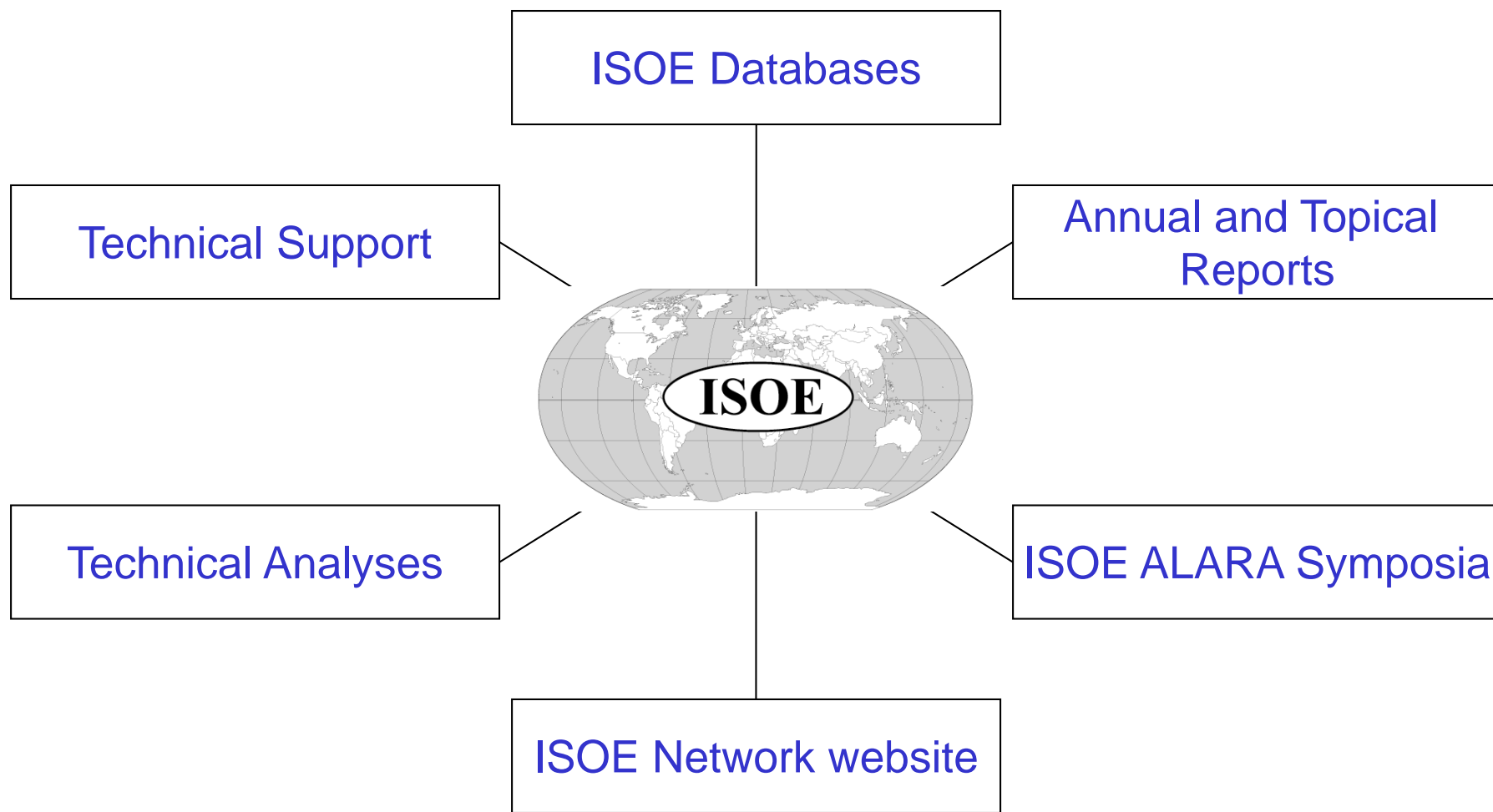
Current ISOE Official Participants (January 2010)

60 Participating Utilities in
26 countries

278 operating units;
36 shutdown units

Participating Regulators of
22 countries

ISOE Products



ISOE products support dose trend analyses, benchmarking, technique comparisons;
application of ALARA and good work management in local RP programmes

What is in the ISOEDAT Database?

- **ISOE 1:** Dosimetric information from commercial NPPs in operation, shut down or in some stage of decommissioning, including:
 - annual collective dose for normal operation
 - maintenance/refuelling outage
 - unplanned outage periods
 - annual collective dose for certain tasks and worker categories
- **ISOE 2:** Plant-specific information relevant to dose reduction, such as materials, water chemistry, start-up/shutdown procedures, cobalt reduction programme, etc.
- **ISOE 3:** Radiation protection related information for specific operations, jobs, procedures, equipment or tasks (radiological lessons learned):
 - effective dose reduction
 - effective decontamination
 - implementation of work management principles

Who Can Access the Database?

- **ISOE Participants** can access the DB on-line (ISOE website) and on CD-ROM (Microsoft ACCESS)
 - Web version is routinely updated
 - CD-ROM is distributed annually after all data received
 - A set of pre-defined data queries facilitates trend analysis, benchmarking between plants, sister units, etc.
- **Participating Utilities:**
 - Full access to global database (ISOE 1, 2, 3)
- **Participating Authorities:**
 - Full access to ISOE 1 data from national licensees
 - Limited access to ISOE 1 data from other countries
 - General information, annual dose statistics, information about external and internal dose

Database Analyses and Benchmarking

- The extensive data in ISOEDAT provides a solid basis for analyses on issues in operational RP such as dose trends, doses related to certain jobs and tasks, identification of good performance, etc
- Several ways to use the database:
 - a) MADRAS analysis package : Main trends in occupational exposure
 - b) Direct access to ISOE 1 questionnaires, including contact information and complementary data
 - c) For more complex analyses: Direct access to DB, requests to the technical centres, RP forum, ...

MADRAS Data Analysis Package

- A set of pre-defined data queries to facilitate analysis of main trends in occupational exposure, benchmarking between plants, sister units, etc.
 - Benchmarking at unit level
 - Annual average collective dose per reactor
 - Annual total collective dose
 - Annual collective dose per TWh
 - Contribution of outside personnel and outages to total collective dose
 - Evolution of the number of reactor units
 - 3-yr rolling average collective dose per reactor
 - Miscellaneous queries

Using ISOEDAT as a Benchmarking Tool

- Analyses at **country or regional level**:

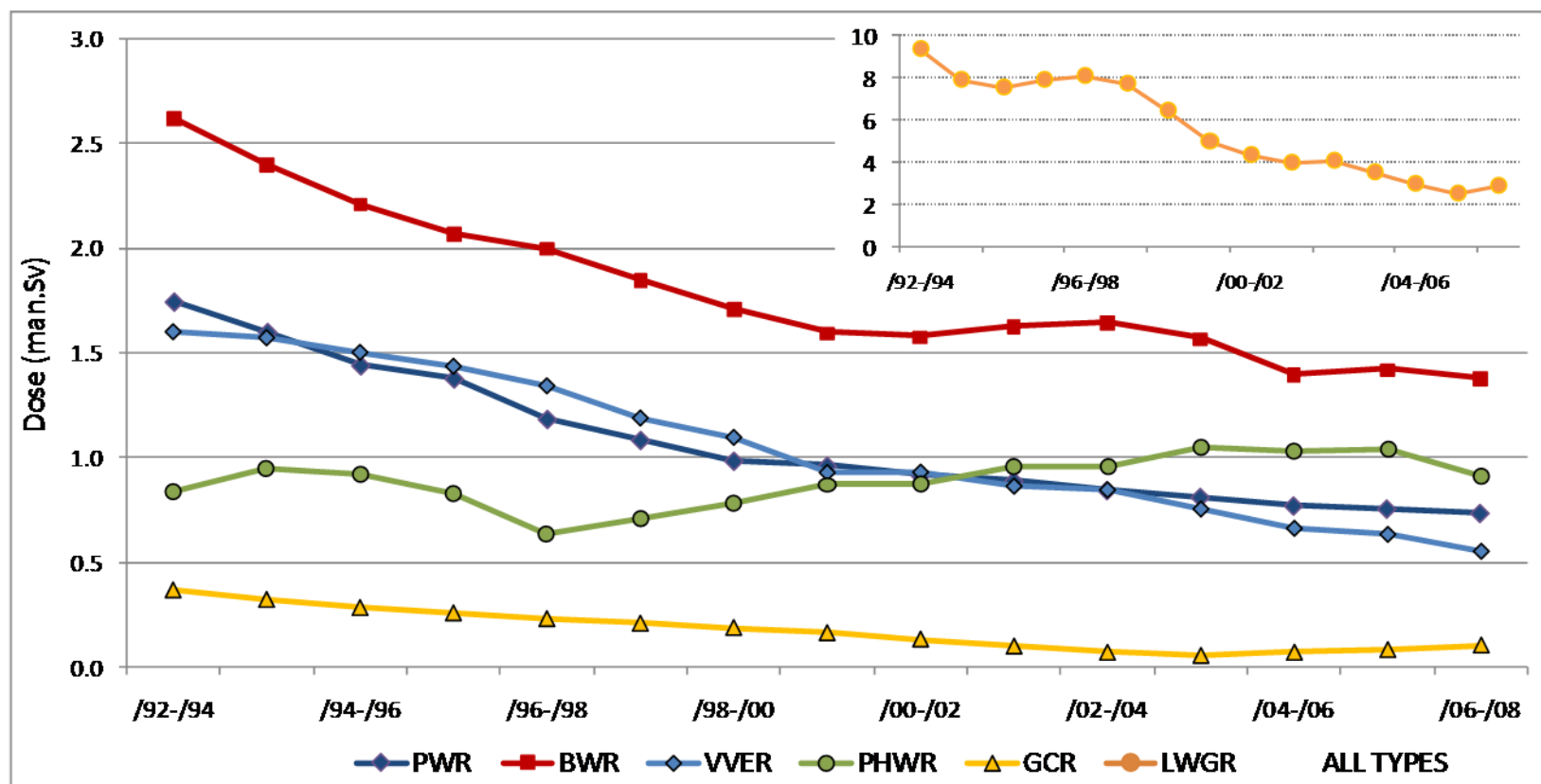
*Trends in Annual average collective dose per reactor /
Annual total collective dose*

- Between countries or regions: by country/region for a given reactor type, or all reactors, including 3-yr rolling average
 - Within a country: Specific unit against another unit or by type of reactor
- Analyses at **utility level**: benchmarking of reactors within a utility
 - Specific unit against another unit
 - Specific unit against its sister group / reactor type
- Analyses at **unit level**
 - Specific unit against another unit / sister group / reactor type
 - Benchmarking at the job and task level

Example 1

Global dose trends by reactor type

- For most reactor types, the annual average collective dose per operating reactor has consistently decreased over the time period covered in by ISOE

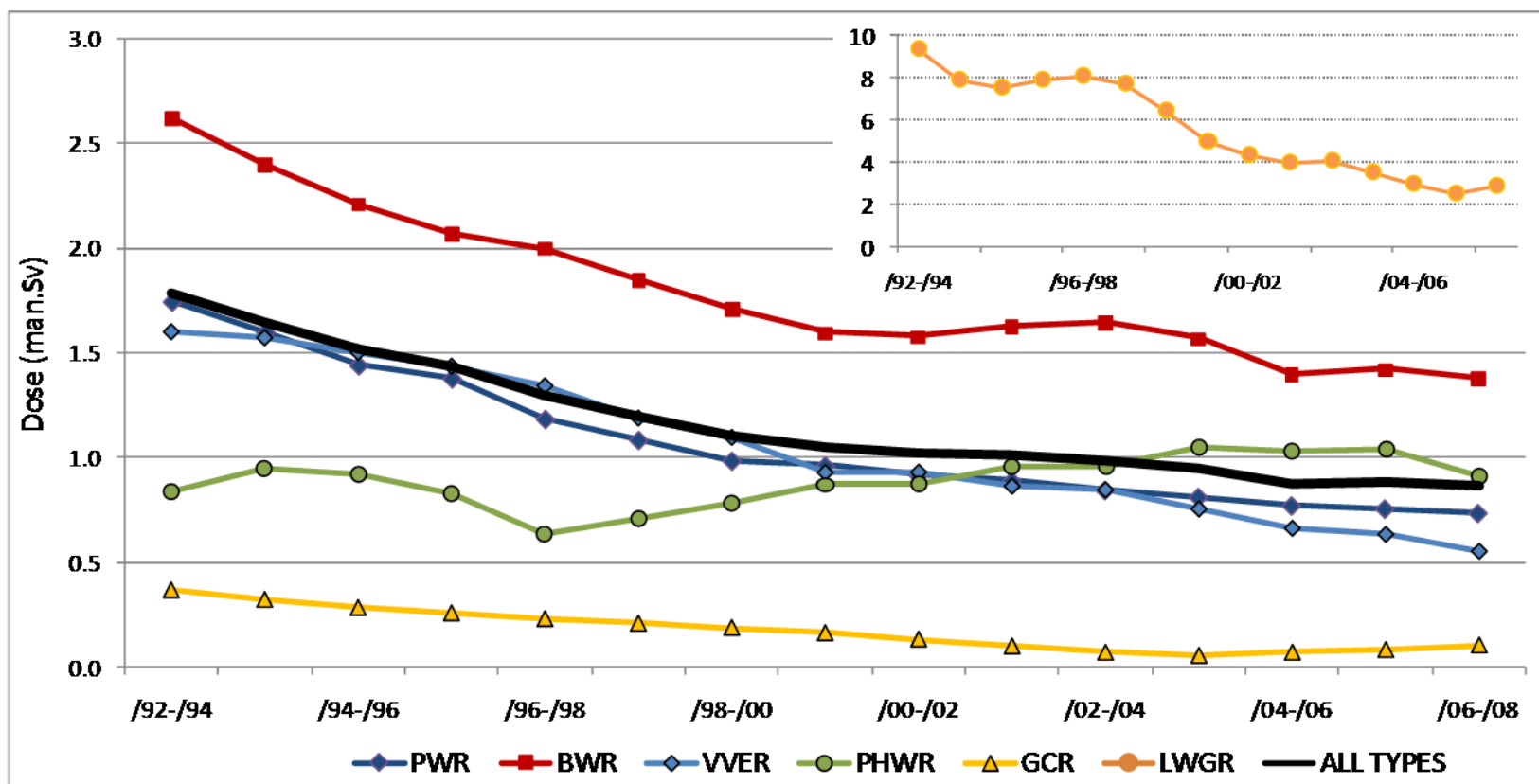


3-year rolling average/reactor for all operating reactors in ISOE by reactor type, 1992-2008 (man.Sv)

Example 1

Global dose trends by reactor type

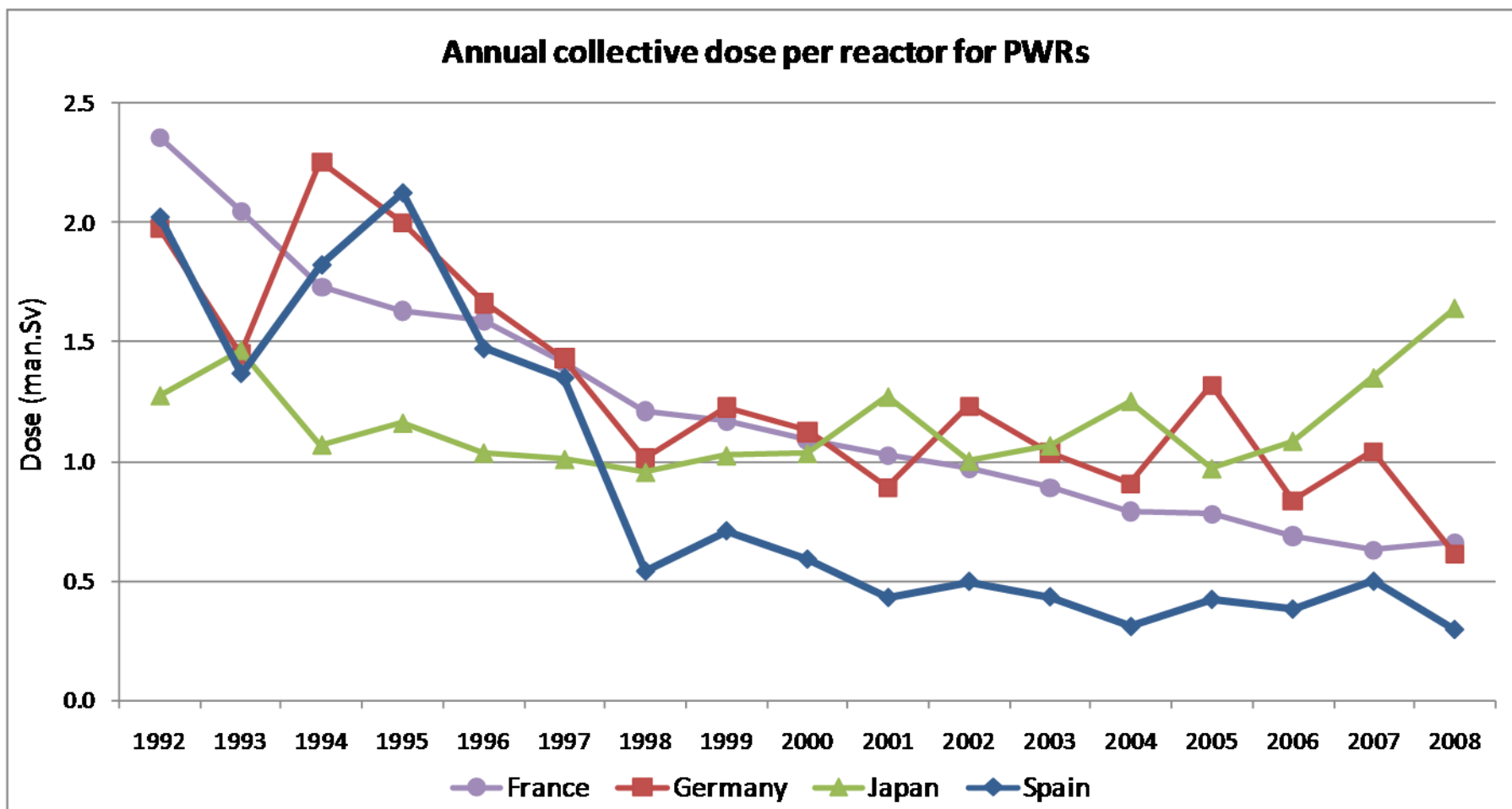
- For most reactor types, the annual average collective dose per operating reactor has consistently decreased over the time period covered in by ISOE



3-year rolling average/reactor for all operating reactors in ISOE by reactor type, 1992-2008 (man.Sv)

Example 2

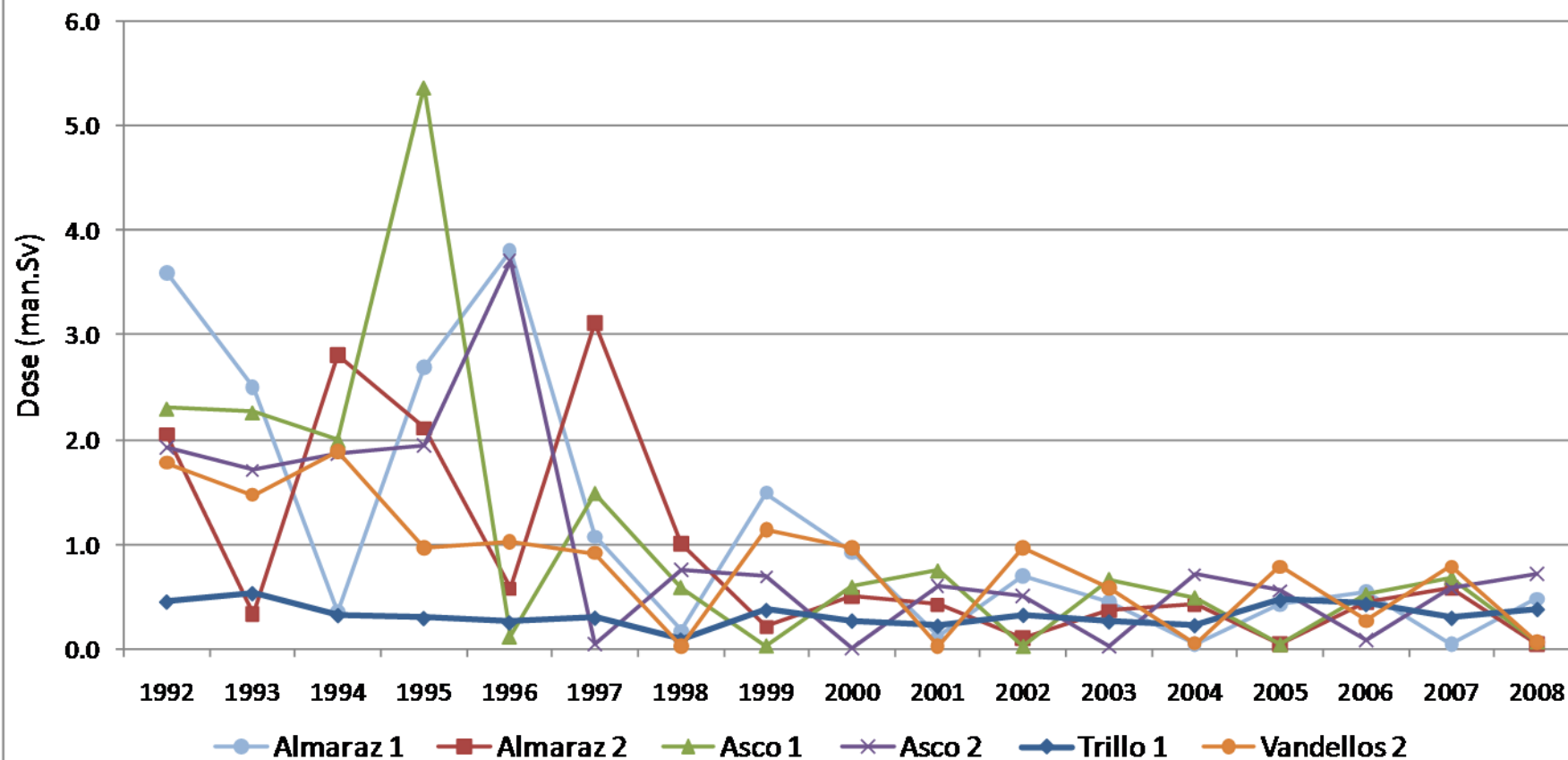
Country dose trends by reactor type (PWRs)



Example 3

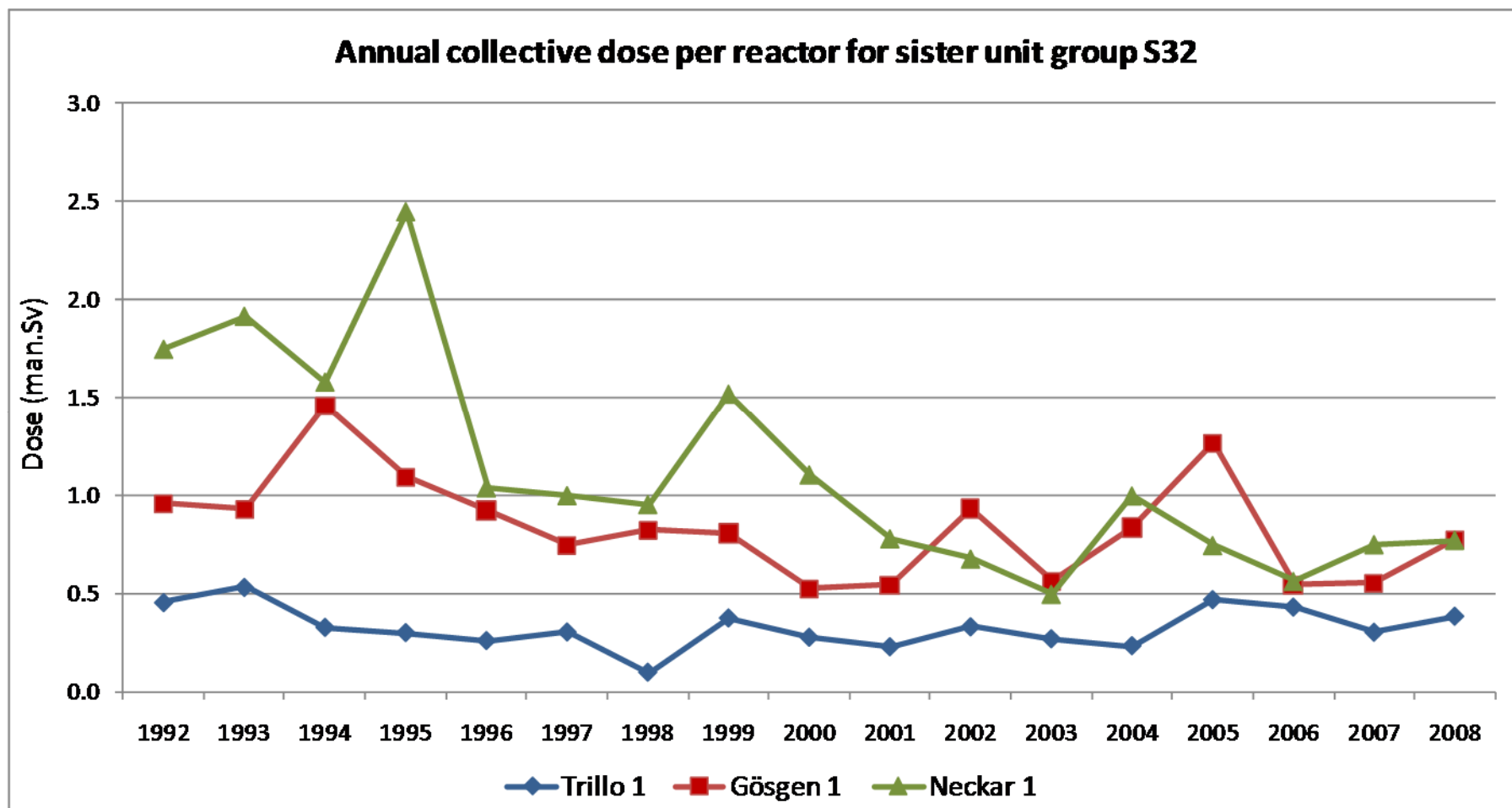
Dose trends for 1 country by reactor type (Spain-PWRs)

Annual collective dose per reactor for Spanish PWRs



Example 4

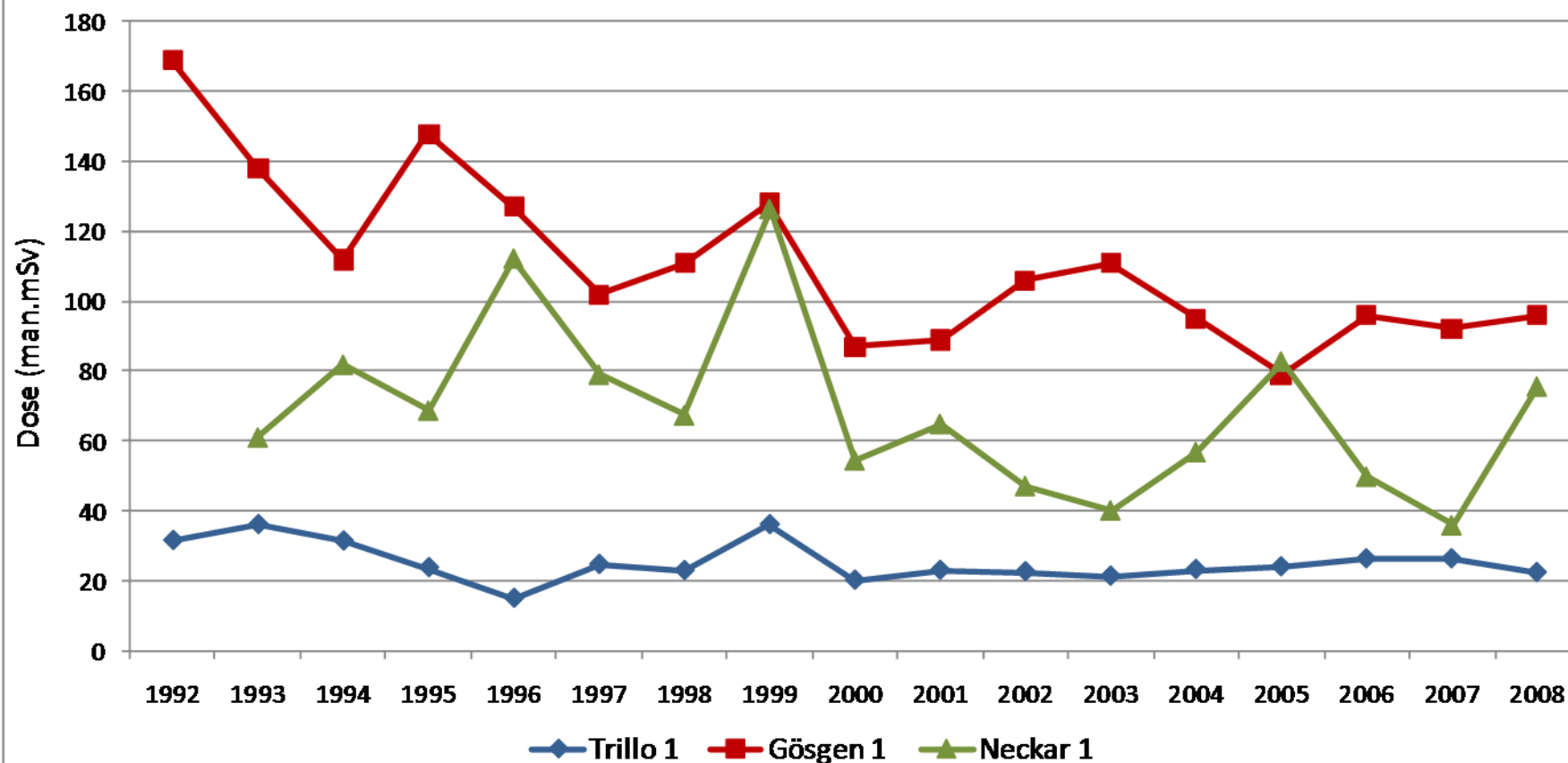
Dose trends for 1 sister unit group (S32)



Example 5

Dose trends for sister group and job (S32-refueling)

Collective dose for sister unit group S32 and job Refueling



Sharing Good Performance/Experience

- ISOE offers also several **communication channels**:
 - Contact information in the database for each plant
 - RP Forum on the ISOE Network website
 - Requests to the technical centers on issues in operational RP
 - ISOE ALARA Symposium
 - Voluntary site benchmark visits for exchange of good RP practice, dose reduction information among Participants

ISOE Network website (www.isoe-network.net)

Web-based ALARA resource for ISOE members

- Web portal for practical ALARA resources for **ISOE Participants**:
 - ISOE database: Data entry, analysis
 - ISOE products, resources: Annual reports, info sheets, work management report, ISOE News, etc
 - Symposium Proceedings
 - RP Contacts
 - RP forum
 - List of events, etc
- A global approach to ALARA management



Symposium

- **Regional:**

- North-America: Fort Lauderdale, USA, January 2010
- Asia: Korea, September/October 2010

- **International:** **Cambridge, United Kingdom
17-19 November 2010**

16 November 2010:

- RPM Day
- Regulatory Body Day

Thank you for your attention!

OECD Nuclear Energy Agency
International Atomic Energy Agency



INFORMATION SYSTEM ON OCCUPATIONAL EXPOSURE

For more information, please visit:
www.isoe-network.net