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Swedish Radiation Safety Authority

HOW TO SECURE COMPETENCE IN RADIATION SAFETY?

SSM:s view concerning Sweden

A government assignment on long-term knowledge management

- Investigate the prerequisites for maintaining national competens within the Authority’s area of responsibility
- Identify the stakeholder’s potential to recruit staff having sufficient qualifications
- Identify stakeholders that provide funding for research and education in relveant areas and identify approaches to interaction on future areas on investment

Main background factors

- International peer review (IRRS) showed that Sweden does not fully comply with IAEA standards for maintaining competence
- The decisions of the nuclear power industry to shut down four nuclear power reactors up to and including 2020

A national framework for knowledge management

- Universities educates students, and provide funding for researchers
- Dynamic research environments provide knowledge, and contribute to high quality education
- Students are attracted to higher education and can forsee being employed
- Employers recruit educated people
  - Internal training and deepened competence

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Content

About the investigation

Three perspectives investigated

- Employers' needs of competence
  - Shapes the needs of the national system for knowledge management
- Universities' programmes
- Society's need for scientific expertise

Four sectors

- Nuclear power sector
- Other industrial applications
- Care activities
- Government authorities

The data compiled included

- SSM:s former government assignments regarding knowledge management
- Professional skills assessments carried out by the major licensees of nuclear facilities
- Statistical data on employee competence
- Questionaire responses from approximately 2,000 licensees

- Interviews with 25 representatives of relevant universities
- Discussions with the reference group
  - Comprising attendees from the nuclear power industry, health and medical services, competent authorities, and universities.

Results

Short version, nuclear power sector

The nuclear power industry

- No decreasing recruitment needs, on the other hand, changing composition of skills:
  - Crews for the operation of nuclear power plants are decreasing
  - Increased need in nuclear waste, operational radiation protection and MTO
- More difficult to recruit
- The majority of new employees receive sector-specific skills through internal training

University programs - nuclear technology

- There are capacities in the form of teacher resources and infrastructures to educate more students at present
- The number of students decreases
- Only one of the previous three nuclear master's programs is given

Research environments - nuclear technology

- Universities' financial situation pressed:
  - Research funding is decreasing, among other things. because of reduced support from industry
  - Decreasing student litters

University programs - radiation protection

- Limited training capacity in radiation biology and radioecology
  - do not have their own basic education
- Lack of critical mass
  - difficult scale up education volumes when needed

Research environments - radiation protection

- Radiation biology and radioecology are weak fields where SSM today is the sole financier
- The competence in Sweden today is dependent on single individuals

Analysis

Conclusions

- There is a need to strengthen the national framework for knowledge management in areas relating to radiation safety
  - Energy agreement on a political level signifies that the nuclear power sector will need long-term knowledge management

Present underfunding of several areas of research critical to society

- Certain radiation safety competences are needed primarily for major radiological accidents
- Research is not considered scientifically interesting by the major research financiers
- The nuclear power industry reduced its research budget due to financial pressure

Difficulties with monitoring and controlling the framework

- The radiation safety sector is fragmented
- Radiation safety only constitutes part of the main actors business – not the core business
- Radiation safety is not only an own discipline within the basic sciences having several cross-disciplinary links,
  - are also often categorised into different basic sciences belonging to technical and natural sciences
- To influence the framework, action by many actors are required

Measures proposed

- 11 measures proposed to the Swedish Government
- 6 measures that SSM can carry out
- 2 recommendations to the licensees

Measures to the Government

- National cooperation and coordinated controll
  - Establish a separate chapter covering the field of radiation safety in the government's research bill
  - Task SSM to produce and maintain a national strategy for knowledge management
  - Task SSM and the central government researchs councils to cooperate on funding and shared strategies

Measures to the Government

- Reinforces funding for critical areas of research
  - Increase SSM:s research budget by SEK 24 million
  - Sex areas of research that needs increased investments:
    - Nuclear engineering, including reactor physics, thermal hydraulics and nuclear data
    - Severe accidents and nuclear chemistry
    - Safeguards and non-proliferation
    - Radiation biology
    - Radioecology
    - Radiation protection dosimetry

Measures to the Government

- Guaranteed availability of education programmes that are critical to society
  - Task SSM to investigate which education programmes need guaranteed availability, and which universities should offer them
  - Task the universities to act on the result of the above mentionend investigation.

SSMs' planned measures

- Interaction platform for maintaining dialogue with key stakeholders
  - Compile annual updates of the current status of the knowledge management framework
  - Conduct dialogue on consultation responses regarding the government bill on research strategies
  - Conduct dialogue on the national strategy for knowledge management

Recommendations for licensees

- Licensees should run campaigns to increase the attractiveness of jobs in the sector
- Licensees should continue to develop opportunities for relevant employees to maintain and develop in-depth skills

Changes since september 2018

Industry

Universities

SSM

Nuclear power industry

- Recruitment campaignes
  - It is possible to recruit, but the cost is higher
- Vattenfall, Uniper in Sweden and TVO in Finland: establishing a network for future competence supply, where advanced engineering expertise becomes available as a flexible resource.

Universities

- Uppsala university starts its' nuclear engineering programme again
  - Two programmes out of three now running

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- Project started to see how we systematically and effective can compile annual updates of the current status of the knowledge management framework
- Plan to gather the former reference group into the new interaction platform for maintaining the dialogue as soon as we know more
- Dialogue with the central government researchs councils to start

Government’s measures

- To be continued when a new government is established