STUDY CASE N° 20: TRANSPORT CASE PROMPTS REMINDER ON THE IMPORTANCE OF RADIATION PROTECTION CONTROLS

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❑ Description and analysis of the incident

The UK Health and Safety Executive (HSE) have issued a reminder to companies working with radiation on the importance of protection control measures, including basic monitoring. The reminder follows the conclusion of a prosecution case brought jointly by HSE and the UK Department for Transport (DfT) against specialist contractor, AEA Technology plc (AEAT).

The court fined the company a total of £250,000 (approx Euro 343,000) and ordered to pay £151,323 (approx Euro 205,000) prosecution costs. The company pleaded guilty to criminal charges under health and safety and road transport law, of:

(i) Failing to ensure, so far as reasonably practicable, the health safety and welfare at work of employees during work associated with the removal and transport of the radiation source;

(ii) Failing to conduct the transport and management of radioactive materials in such a way as to ensure, so far as was reasonably practicable, that persons not in its employment who may be affected thereby were not exposed to risks to their health or safety;

(iii) Failing to take all necessary steps to restrict, so far as reasonably practicable, the extent to which employees and others were exposed to ionising radiation;

(iv) Failing to ensure that ionising radiation levels were adequately monitored;

(v) Failing to ensure that requirements for package inspection were satisfied before shipment, and;

(vi) Causing a package containing a radioactive source to be transported without determining the Transport Index of that package. A further charge of failing to adequately consult a Radiation Protection Adviser (qualified expert) was held on file.

The prosecution followed an incident in March 2002, when AEAT were contracted to remove a 129 TBq cobalt-60 tleltherapy source, previously used in cancer treatment, from a Leeds hospital and transport it 3.5 hours by road to Windscale, Cumbria, for disposal. At Windscale, radiation levels of up to 3.5 Sv/h were discovered coming from underside of the specialist container used to transport the material.

Investigation revealed that a vital shieldielding bar was missing from the inside of the transport container and that this allowed a beam of radiation to emit from its base. It was also found that the packaging inside the container was wrongly configured and the source was able to mover around inside the container. Although radioation monitoring had been performed around the container, measurements were not routinely carried underneath and the high dose rates had therefore gone unnoticed.

A primary cause of the incident was the company's failure to supervise and support their staff properly in the use and preparation of the transport containers.

Fortunately although there is no evidence that anyone received a significant exposure during the preparation and transport of this material, there was clearly the potential for an extremely serious incident. Anyone exposed to the beam coming from the container could have exceeded the legal dose limit within seconds and suffered radiation burns within minutes.

❑ Lessons Learned

The case highlights the need for proper preparation and monitoring of transport packages. Adhering to approved contaner preparation procedures would have detected the omission of the shielding bar before the radioactive material was loaded to the package. Whilst passing sentence, the court remarked that the incident had arisen because of poor management, no oversight, and poor relationships between key personnel. Employees involved were substantially remiss, indefferent to the fact that the wrong transport contaner was used, made assumptions that were wholly unjustified, failed to follow their own procedures, were cavalier and indifferent to their duties, and their failure to obtain advice from their RPA demonstrated a degree of arrogance. The court also commented that the risk was considerable, was deeply concerned that had there been a road traffic accident during the journey grave risk of radiation injury could have resulted, and that it was not impressed by the suggestion that the employees involved had been misslead by the numbering of the flasks. It concluded that anyone involved in the radiation industry had to be meticulosly caerful and that there was no room for carelessness, making assumptions and not following procedures.