

N228. 10 CFR 20'S Impact On Computerized Dose Tracking

On January 1, 1994, revised Title 10, Code of Federal Regulation Part 20, Standards for Protection Against Radiation (10 CFR 20) will become law, changing several aspects of radiation protection programs at U.S. licensed facilities. This new regulation reflects the findings of the International Commission on Radiation Protection (ICRP). As a result of ICRP findings (and other studies), airborne limits for radioactive isotopes have changed. The new primary challenge for radiation protection programs will now be to adapt to the "Rem is a Rem" philosophy, and to provide real-time documentation for effective dose equivalence. Following implementation of revised 10 CFR 20, it will be required that:

- Real-time exposure tracking reflect both internal and external dose.
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- Use of respiratory protection must be consistent with maintaining exposures as low as reasonably achievable (ALARA).
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- Automated (electronic) record-keeping and reporting will become prevalent and accommodate real-time exposure tracking. New requirements for closer monitoring, record-keeping, and regulatory reporting of personnel exposures on a real-time basis will have a major effect on utilities. During outage maintenance activities, dose tracking will become especially challenging. Automated (electronic) record-keeping and reporting will become prevalent to accommodate real-time exposure tracking.

At many facilities, significant personnel dose results from internal exposures from airborne alpha- and beta-emitters. While these facilities must meet the same record-keeping and reporting requirements imposed on utilities, they must also address internal exposure concerns. Regulatory guidance states that sample analyses be made available by the end of the next work shift, and that air sample trending is to be performed. Rapid analysis of airborne results represents significant challenges in air sample accountability and information processing for these sites.

Advancements in computerized record systems can address most concerns. Through use of computer systems, accurate recording of personnel exposures will not only enhance regulatory reporting, but also provide opportunities for improved radiological protection and work performance. For instance, integrated systems allow ALARA principles to be truly implemented by permitting review/analysis of exposure histories and task performance records associated with repetitive work prior to maintenance planning.

Advancements in computer programming and automated systems are yielding a number of solutions which can help licensees achieve compliance with 10 CFR 20. Solutions include automated systems which track data and perform routine trending and analysis of air sampling information. Air sampling information can be used to feed dose tracking programs to calculate internal dose. Dose tracking programs can, in turn, interface with other radiological and health physics software programs to perform management of the overall radiological control process. Revised 10 CFR 20 regulations will significantly affect many aspects of radiation protection programs. Advanced information systems can provide solutions to address these concerns, while permitting an increased level of operational effectiveness to be achieved. These changes should result in improved performance and increased worker safety.