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What is eCAM?

A new concept for air monitoring that uses centralized data analysis, data storage, and direct notification methods to provide autonomous air monitoring.

- The core of the eCAM is a radiation detector that has no local data display – the raw count rate on an air sample is transmitted to a remote computer for analysis, data archive, and status/alerts/alarms
- eCAM's computer monitors conditions, and delivers messages in plain language specific to each situation by email, text, or automated voice.
Basic Constituents

- Remote Computer
- Data Base
- Workers
- RCTs

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Optional Components

- Sample pump flow sensor or ON-OFF control
- Location within a building (RFID?)
- Location outdoors (GPS)
- Workers in vicinity (RFID)
- Video camera surveillance
- Video conferencing
- Surface contamination monitoring
Major Advantages

- eCAM system has only one computer to set up.
- eCAM provides direct plain language notification and instruction messages to the workers, supervision, RCTs and managers.
- Collects and manages radioactivity data, maintains work logs, and allows remote audio-video monitoring, so that labor costs are reduced.
- Option to automatically sense which workers are in each location and automate exposure tracking.
Examples of Previous Automation

1980s – automated access control at nuclear power plants can check workers in/out of RCA

1990s – Remote Monitoring Systems use telemetry to control of high-dose rate environments with automated monitoring and stay time calculations

2000s – Floor monitoring robots automatically detect surface contamination at RFETS and K-33/K-31
Current Example of Cloud Computing: Mirion’s “Instadose”

- The instadose™ is a small, rugged dosimeter based on direct ion storage technology.
- A memory chip stores each user's identity via an embedded unique serial number.
- Now users have the flexibility to measure and record their radiation dose at any time from any computer with USB and internet access, once a user registers at: www.instadose.com.
- Bluetooth version in development.
Benefits of Radcon Automation

- These systems eliminate the time required for recording and transcribing data by hand.
- The data are complete and legible, which improves quality of records.
- The digital systems use consistent measurement algorithms and perform complicated analysis in real time, which provides more accurate and precise data.
- The digital systems reduce labor requirements.
Conditions that Facilitate Adoption

- Technology is risky and requires significant effort:
  - Urgent problem with no other solution
  - Failure has cost and schedule impacts
  - Budget pressure
- Automated access control and remote dose monitoring generally replaced prior methods due to productivity and quality – became industry standards
- Hand data logger, did not become standard because it required on-site IT staff support
- Generally available IT support would allow cloud computing – tablets could be used for small projects.
Benefits

- 20% to 30% overall lower program costs
- Video records of important jobs
- Automated time tracking of workers and air sample results
- No expensive training in setup of CAMs or understanding arcane CAM alarms
- Radcon status and directions given in plain language communication – minimum training
- Concept could be extended to surface contamination monitoring