



## SEC<sup>3</sup>URE RADIATION SAFETY | Frequently Asked Questions

### Who is required to be monitored for radiation exposure?

We are surrounded by radiation in our daily lives. Radiation monitoring should be considered for those who work in occupations where risks may be prevalent due to exposures from X-ray equipment or in labs where radiation producing equipment or material are utilized and, of course, nuclear power plants.

For healthcare, any individual that is an occupationally exposed worker in any environment at a facility where equipment is static, portable (such as a C-arm), or working around radiation producing material (Nuclear Medicine), is required to follow the facility guidelines for radiation safety.

Medical facility administrators and Radiation Safety Officers determine who will be monitored for occupational exposure. Even in environments where exposure risks may be minimal, it is still good policy to take the proper precautions to monitor exposure over time. It is important for any person that has the potential of receiving work-related occupational exposure to be monitored. Monitoring allows the tracking of individual dosage to determine the risks from any exposure received over time.

### What is work-related occupational exposure?

Occupational exposure occurs during the performance of job duties and may place a health-care worker at risk of ionizing radiation exposure.

### What is cumulative dose?

Cumulative dose is the total dose resulting from repeated exposures of ionizing radiation to an exposed healthcare worker to the same portion of the body, or to the whole body, over a period of time.

### What is ALARA?

As defined by the U.S. Nuclear Regulatory Commission (NRC: Title 10, Chapter 20.1003):

*"ALARA is an acronym for **as low as is reasonably achievable**." It means making every reasonable effort to maintain exposures to radiation as far below the dose limits in this part as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest."*

## What is ionizing radiation and how is it measured?

*From World Health Organization and U.S. Environmental Protection Agency sources:*

Energy emitted from any source is generally referred to as radiation. Examples include heat or light from the sun, microwaves from an oven, X-rays from an X-ray tube, and gamma rays from radioactive elements. **Ionizing radiation** is radiation with enough energy so that during an interaction with an atom, it can remove tightly bound electrons from the orbit of an atom, causing the atom to become charged or ionized. Ionizing radiation can affect the atoms in living things, so it poses a health risk by damaging tissue and DNA in genes.

**Effective dose** describes the amount of radiation absorbed by a person, adjusted to account for the type of radiation received and the effect on particular organs.

In the United States, the unit used to measure effective dose is called the ‘**millirem**’ (mrem), which is one-thousandth of a rem. Humans can typically receive one (1) mrem dose by simply taking one coast-to-coast flight or by wearing a watch with a luminous dial for a year. People are exposed to ionizing radiation through natural/background (terrestrial and space) and medical (e.g., x-rays) sources. The National Council on Radiation Protection and Measurements (NCRP) has calculated that the average yearly radiation dose per person in the U.S. is 620 mrem.

Based upon U.S. Nuclear Regulatory Commission regulations (USNRC), *Title 10, Part 20, Code of Regulations*, the annual occupational radiation exposure limits should be no more than: <sup>†</sup>

- Whole body, blood-forming organs, gonads: 5,000 mrem/year
- Lens of eye: 15,000 mrem/year
- Extremities and skin: 50,000 mrem/year
- Fetal: 500 mrem/gestation period
- General Public: 100 mrem/year

<sup>†</sup> *While many states have adopted these occupational dose limits, others may follow stricter levels.*

## What is the SEC<sup>3</sup>URE Radiation Exposure Credential?

The SEC<sup>3</sup>URE Radiation Exposure Credential requires Healthcare Industry Representatives (HCIRs / Reps) to be monitored for radiation exposure so they may access your facility. You may make this required for all HCIRs / Reps entering your facilities or by specific HCIR / Rep Category where their access is limited to only those environments where radiation is present. *IntelliCentrics offers HCIRs / Reps the SEC<sup>3</sup>URE **Radiation Exposure Package** for \$199 annually with their paid memberships.* HCIRs / Reps may also independently purchase third-party monitoring services so long as it is through a NVLAP accredited laboratory.

## What is the SEC<sup>3</sup>URE Radiation Safety Training Credential?

We all play a role in a safe and SEC<sup>3</sup>URE healthcare experience. The SEC<sup>3</sup>URE Radiation Safety Training course, “*Radiation Safety*,” will help your HCIR audience recognize how to protect themselves as well as others in your facilities. The training is available online through their SEC<sup>3</sup>URE Passport University.

System or Facility Radiation Safety Officers (RSO) work with department heads and staff wherever radiation producing equipment or material are present to ensure the safety and well-being of everyone who works in those environments. This is mandated by the U.S. Nuclear Regulatory Commission (U.S. NRC).

[Click here to learn more about Environmental Exposure and the SEC<sup>3</sup>URE Radiation Safety Program.](#)

## What if the HCIR already completed a radiation safety course?

If the HCIR completed a radiation safety course within the last three (3) years, they may submit their completion certificate through their [SEC<sup>3</sup>URE.com](https://www.sec3ure.com) accounts for approval. If it is an accredited course, then it will be accepted. If not, they will need to complete an accredited radiation safety course such as the one available through [SEC<sup>3</sup>URE University Annual e-Pass](#), “Radiation Safety.”

## What is a dosimeter and how does it work?

A dosimeter measures radiation exposure due to x, gamma and beta radiation with the Landauer® optically stimulated luminescence (OSL) technology. The OSL radiation detector inside the dosimeter is the thin strip of specially formulated aluminum oxide (Al<sub>2</sub>O<sub>3</sub>) crystalline. When analyzed, the Al<sub>2</sub>O<sub>3</sub> strip is stimulated with selected frequencies of laser light causing it to luminesce in proportion to the amount of radiation dose and the intensity of stimulation light. (Source: [Landauer® Luxel®+ product FAQ](#))

A **wear dosimeter** travels with HCIRs as they go from facility to facility to measure their occupational radiation dose. They also keep a **control dosimeter** in a safe place in their home or office. When both dosimeters are returned at the end of the monitoring quarter, the NVLAP lab subtracts the exposure levels indicated on the **control** dosimeter from the **wear** dosimeter exposure levels to provide occupational radiation dose. This accounts for any radiation doses the dosimeters receive during transit or through everyday background exposure.

## What is an NVLAP lab?

The **National Voluntary Laboratory Accreditation Program** (NVLAP), is an annual accreditation program for testing laboratories. NVLAP's Ionizing Radiation Dosimetry field of testing was established in 1984 to implement the U.S. Nuclear Regulatory Commission's (NRC) requirement that all dosimeters used by licensees to comply with federal law must be processed and evaluated by a NVLAP accredited laboratory.

## How do HCIRs use the SEC<sup>3</sup>URE whole-body dosimeters?

HCIRs snap the **wear dosimeter** into the reusable clip-holder and attach it to themselves as indicated. They also keep a **control dosimeter** in a safe place at home or their office. *They are not supposed to use the control dosimeter for any other purpose!*

An icon on the face of the SEC<sup>3</sup>URE dosimeter identifies the correct placement of the dosimeter. Wear personnel dosimeters with the icon facing away from the body. Dosimeters should be worn on the outside of lead aprons. Dosimeters should be worn during all working hours to record occupational exposure. HCIRs DO NOT wear their dosimeters during non-working hours while undergoing diagnostic or medical procedures where exposures would not be part of their work-related occupational exposure history.



## Are there any precautions with using the SEC<sup>3</sup>URE whole-body dosimeters?

Dosimeters should not be worn outside the workplace, or during personal medical procedures. Control dosimeters should be stored outside of X-ray or imaging rooms away from radiation sources.



When traveling by air, before going through airport security screening, inform the TSA agents they will need to hand-check for the dosimeter because it cannot go through the X-ray machines.

## How can I tell if an HCIR should be wearing a dosimeter?

*We all play a role.* If you or anyone in your facility spots a radiation symbol on the check-in badge, look to make sure the HCIR / Vendor Rep is also wearing a radiation dosimeter. *Do not hesitate to ask!* This means the HCIR / Rep has indicated she or he is potentially exposed to ionizing radiation during their visits with your facility and are included in a radiation monitoring program.

Likewise, if there is an HCIR / Vendor Rep in a radiation environment and her/his badge does NOT have the radiation icon, *do not hesitate to ask if they should be there!*



## Can the SEC<sup>3</sup>URE wear and control dosimeters be shared with another individual?

No. Dosimeters are to be worn and stored only by the individual to whom they are assigned to.

## What do HCIRs do if they lose their SEC<sup>3</sup>URE dosimeters?

HCIRs are instructed to logon and order additional dosimeters through their [www.SEC3URE.com](http://www.SEC3URE.com) account or contact IntelliCentrics at ☎ (817) SEC3URE (732-3873) or email ✉ [CustomerService.US@IntelliCentrics.com](mailto:CustomerService.US@IntelliCentrics.com).

## What do HCIRs do if they lose the reusable clip-holder?

HCIRs are instructed to contact IntelliCentrics at ☎ (817) SEC3URE (732-3873) or email ✉ [CustomerService.US@IntelliCentrics.com](mailto:CustomerService.US@IntelliCentrics.com) and we will provide a replacement. Some healthcare facilities may also keep extra clips, so they may also check with the facility Radiation Safety Officer (RSO).

## How and when do HCIRs receive their exposure data?

At the end of each wear period, dosimeters are returned for processing and then analyzed. Their SEC<sup>3</sup>URE radiation exposure dashboard will update automatically within fifteen (15) business days from the receipt of the returned dosimeters or if they upload data from another radiation monitoring company.

## Where can HCIRs view exposure data and for how long is it valid?

Their [SEC3URE.com](http://SEC3URE.com) accounts will have all updated radiation exposure data reflecting lifetime, yearly, and quarterly exposures. The exposure analysis generated from returned wear and control dosimeters will populate automatically displaying the previous quarterly period. The SEC<sup>3</sup>URE dashboard will show if they are within ALARA guidelines, at risk, or exceeding ALARA guidelines.

## Can facility administrators or Radiation Safety Officers see HCIR exposure data?

When you set the Radiation Exposure credential requirement for your facility or HCIR / Rep category, IntelliCentrics **SEC<sup>3</sup>URE** will monitor compliance with all current state and federal guidelines. If an HCIR falls out of compliance with your Radiation Training or Exposure credential requirements, she/he will not be allowed to enter your facility(ies) through SEC<sup>3</sup>URE.

You may view individual HCIR / Rep exposure data by performing a REPsearch and then viewing the HCIR / Rep's dashboard. Select **View Existing Credentials** and then look for the Radiation Exposure **Details** link next to the person's name. Under that credential, you can review (*current*) *Quarterly* and *Yearly* dosimeter ALARA exposure levels.

You may also pull down the **REPtools** menu and select the **Facility Radiation Exposure Report** to view all the reps attached to your facilities where the radiation exposure and safety training credentials are required. This will list compliant and non-compliant reps as well as whether they are above or below NRC radiation exposure limit levels.

## What do HCIRs do if they change companies?

If or when a HCIR leaves one company for another it is not a problem. We are tracking the individual, not the company. They simply update their profile when they start working for a new company.

If their employer requests a radiation exposure history, an NRC Form 5 will provide the required data. Please have the HCIR call us at ☎ (817) SEC3URE (732-3873) or email ✉ [CustomerService.US@IntelliCentrics.com](mailto:CustomerService.US@IntelliCentrics.com).

## What do HCIRs need to do if they are pregnant?

If and when the HCIR / Rep might become pregnant, if she chooses, she may voluntarily call us at ☎ (817) SEC3URE (732-3873) or email ✉ [CustomerService.US@IntelliCentrics.com](mailto:CustomerService.US@IntelliCentrics.com).

If the HCIR / Rep purchased monitoring through IntelliCentrics, we will send a second dosimeter for monthly fetal monitoring. It is not uncommon to be pregnant and still work around radiation. The second dosimeter is to be worn on the **INSIDE** of the lead apron on their waist so that we can track not only the *HCIR's* dose but any potential dose that the baby might be exposed to. While pregnant, the HCIR should adhere to some strict rules:



- Step out of the room when an exposure is being made.
- Always wear a lead apron while in radiation exposed rooms.
- Keep as much distance from the source of radiation as possible.

When the HCIR / Rep is no longer pregnant, she may call us at ☎ (817) SEC3URE (732-3873) or email ✉ [CustomerService.US@IntelliCentrics.com](mailto:CustomerService.US@IntelliCentrics.com) to cancel the second fetal monitor dosimeter.



## Is the HCIR's job in jeopardy if they receive too high of a dose?

If an HCIR receives too high of a dose, their company will need to review the situation and propose an appropriate course of action to minimize future exposure. If an HCIR reaches too high of a dose at one time, they may be required to avoid work activities where there is the potential to be exposed to additional radiation doses.

These rules are set by regulations and will be strictly enforced for their protection. HCIRs are instructed to closely follow ALL facility safety guidance determined by facility Radiation Safety Officers (RSO).

## Do HCIRs still need a dosimeter if they step away from radiation equipment?

While creating distance between themselves and the source of radiation will reduce occupational exposure, they will still need to be monitored for any potential doses they may/will receive while working around radiation. HCIRs are instructed to closely follow ALL safety guidance determined by facility Radiation Safety Officers (RSO).

## Does wearing a lead apron prevent people from receiving a dose?

Wearing a lead apron will protect much of the body; it does not protect the whole body from radiation. Arms, legs, and heads are still exposed to the radiation. HCIRs are instructed to closely follow ALL safety guidance determined by facility Radiation Safety Officers (RSO).

## If radiation is in use, how do people make sure they're safe?

For everyone's protection, HCIRs are instructed to closely follow ALL safety guidance determined by facility Radiation Safety Officers (RSO). While working in a room with radiation they should always try and stand as far away as possible. 6 feet is always a good idea, but more is better. If the room has a lead shield or a wall to stand behind that would be a better option.

## Do you have any additional questions?

☎ Call us at (817) SEC3URE (732-3873), Option 3

✉ Email us at [HostSupport@IntelliCentrics.com](mailto:HostSupport@IntelliCentrics.com)

