HB

89

<TARGET><BILL>HB 89</BILL><SUBJECT>HB
89</SUBJECT><COMM>HL&C30</COMM></TARGET>

Representative Chris Tuck

House Majority Leader

Alaska State Legislature

District 23 - Representing Dimond Estates, Foxridge, Taku, Campbell, Northwood and Windemere

MEMORANDUM

February 10, 2017

TO: **Representative Sam Kito III**
Chair, Labor & Commerce Committee

FROM: **Rep. Chris Tuck**
House Majority Leader

C.T.

SUBJ: **Hearing Request for House Bill 89**

I respectfully request a hearing for House Bill 89: License Radiologic Technologists.

House Bill 89 would establish licensing requirements for radiology technicians to increase safety for patients and healthcare professionals. Approximately two-thirds of the states have laws regulating the practice of radiologic technology. However, Alaska is not among the majority who require licensing of this profession.

Included in the bill packet:

- House Bill 89 ver J
- Sectional Analysis
- Sponsor Statement
- Support Letters
- Legislative Research Report

If you have any questions please feel free to contact me or my staff Kendra Kloster at 465-3579.

Thank you for your consideration.

State Capitol Bldg. Rm 204
Juneau, AK 99801-1182
Rep.Chris.Tuck@akleg.gov

Phone (907) 465-2095
Fax (907) 465-3810
Toll-free (866) 465-2095

Recieved 1.26.18

Representative Chris Tuck

House Majority Leader

Alaska State Legislature

District 23 - Representing Dimond Estates, Foxridge, Taku, Campbell, Northwood and Windemere

MEMORANDUM

January 24, 2018

TO: **Representative Sam Kito III**
Chair, Labor & Commerce Committee

FROM: **Rep. Chris Tuck**
House Majority Leader

CJT

SUBJ: **Hearing Request for House Bill 89**

I respectfully request a hearing for House Bill 89: License Radiologic Technologists.

House Bill 89 would establish licensing requirements for radiology technicians to increase safety for patients and healthcare professionals. Approximately two-thirds of the states have laws regulating the practice of radiologic technology. However, Alaska is not among the majority who require licensing of this profession.

Included in the bill packet:

- House Bill 89 ver J
- Sectional Analysis
- Sponsor Statement
- Support Letters
- Legislative Research Report

If you have any questions please feel free to contact me or my staff Kendra Kloster at 465-3579.

Thank you for your consideration.

State Capitol Bldg. Rm 204
Juneau, AK 99801-1182
Rep.Chris.Tuck@akleg.gov

Phone (907) 465-2095
Fax (907) 465-3810
Toll-free (866) 465-2095

Representative Chris Tuck

House Majority Leader

Serving House District 23 • Dimond Estates, Foxridge, Taku, Campbell, Northwood, and Windemere

Sponsor Statement
House Bill 89
Licensing Radiologic Technicians

House Bill 89 would establish licensing requirements for radiology technicians to increase safety for patients and healthcare professionals. Approximately two-thirds of the states have laws regulating the practice of radiologic technology. However, Alaska is not among the majority who require licensing of this profession.

Radiology technicians have an important role in the healthcare field to provide services including x-rays used for checking broken bones; Magnetic Resonance Imaging (MRI) used to find tumors, bleeding, diseases, and infections; and Computed Tomography (CT) scans used to diagnose many types of cancer.

While a number of Alaskans use these services, many may not be aware of the potential risk of over-exposure to radiation, which can lead to serious health problems, and even death. To increase safety for the patients and healthcare professionals, we need to ensure technicians are being trained properly and the equipment is checked regularly.

We have been working closely with the radiologic technicians, the Alaska Departments of Health and Social Services and Commerce, Community and Economic Development to ensure we are crafting legislation that will improve public safety standards for Alaskan through these new licensing requirements. The Department of Health and Social Services have been working with radiology technicians across the state to develop regulations that will partner with this legislation to increase safety measures, update our out-of-date regulations, and ensure changes will not adversely affect technicians in rural Alaska.

Radiation protection is about safety and the prevention of undue risk from radiation exposure. House Bill 89 will improve the safety of medical imaging procedures by establishing education and standards to ensure competency of all operators and patients. I respectfully ask for your support in the passage of House Bill 89.

Session (January-April):
State Capitol, Room 204
Juneau, AK 99801-1182
Phone (907) 465-2095

Rep.Chris.Tuck@akleg.gov
www.RepChrisTuck.com

Toll-Free (866) 465-2095

Interim (May-December):
1500 W Benson Blvd, Ste 217
Anchorage, AK 99503
Phone (907) 269-0240

LEGAL SERVICES

DIVISION OF LEGAL AND RESEARCH SERVICES
LEGISLATIVE AFFAIRS AGENCY
STATE OF ALASKA

(907) 465-3867 or 465-2450
FAX (907) 465-2029
Mail Stop 3101

State Capitol
Juneau, Alaska 99801-1182
Deliveries to: 129 6th St., Rm. 329

MEMORANDUM February 10, 2017

SUBJECT: HB 89 Sectional Summary
(Work Order No. 30-LS0072\J)

TO: Representative Chris Tuck
Attn: Kendra Kloster

FROM: Linda Bruce
Legislative Counsel

You have requested a sectional summary of HB 89 concerning licensure of occupations related to radiologic technology, radiation therapy, and nuclear medicine technology. As a preliminary matter, note that this sectional summary should not be considered an authoritative interpretation of the bill and the bill itself is the best statement of its contents.

Section 1 adds regulation of radiologic technologists to the list of occupations under AS 08.01, which applies to all occupations regulated by the Department of Commerce, Community, and Economic Development (department).

Section 2 adds to AS 08 a chapter regulating radiologic technologists.

AS 08.89.100 prohibits unlicensed use of radioactive materials or equipment on a human for diagnostic or therapeutic purposes, subject to several exceptions. It provides that a violation of the section is a class A misdemeanor.

AS 08.89.110 prohibits the use of certain titles associated with radiologic technology by persons who do not hold licenses or permits under AS 08.89, or proof of certification by the American Registry of Radiologic Technologists or the Nuclear Medicine Technology Certification Board. It provides that a violation of the section is a class B misdemeanor.

AS 08.89.120 sets out the qualifications for a license to practice as a radiologic technologist, radiation therapist, or nuclear medicine technologist.

AS 08.89.130 requires the department to evaluate educational programs that train persons for licensure and sets criteria for approval of such programs.

AS 08.89.140 sets out the examination requirements for licensure.

AS 08.89.150 sets out the requirements for the licensing of limited radiologic imagers.

AS 08.89.160 provides for the evaluation and approval by the department of training programs for limited radiologic imagers.

AS 08.89.165 sets out the examination requirements for limited radiologic imagers and requires the department to offer the examination at regular intervals to provide maximum access and sufficient opportunity for interested applicants.

AS 08.89.170 provides criteria for the issuance of temporary permits.

AS 08.89.180 sets out requirements for license renewal and continuing education.

AS 08.89.190 requires licensees and permittees to keep the license or permit document or a verified copy of the license or permit document at each place of employment.

AS 08.89.200 requires licensees and permittees to notify the department of name or address changes within 30 days after the change.

AS 08.89.210 prohibits a person whose license or permit has been revoked for a reason other than the nonpayment of fees from applying again for license or permit until a year has elapsed from the date of revocation; the department may require an examination for reinstatement.

AS 08.89.220 lists the items for which the department is to set fees.

AS 08.89.300 prohibits a person required to have a license or permit under AS 08.89 from knowingly using a radioactive substance or equipment on a human for diagnostic or therapeutic purposes unless prescribed by a licensed practitioner. It provides that a violation of the section is a class A misdemeanor.

AS 08.89.310 allows for the imposition of a civil penalty of up to $5000 on a person required to be licensed or permitted under AS 08.89 who engages in or offers to engage in a type of diagnostic radiologic imaging, radiation therapy, or nuclear medicine technology for which the person is not licensed or permitted.

AS 08.89.320 requires that an application for a license or permit under AS 08.89 be made under oath, and provides that a person who fraudulently obtains or attempts to obtain a license under the chapter, or who forges, counterfeits, or alters a license or permit under this chapter is guilty of a crime.

AS 08.89.330 lists the grounds for which the department may impose a disciplinary sanction or refuse to issue or renew a license or permit.

AS 08.89.340 sets out the disciplinary sanctions that may be imposed if the department finds that a person licensed or holding a permit under AS 08.89 committed an act listed in AS 08.89.330.

AS 08.89.900 provides that for the purpose of setting fees, all persons holding a license under AS 08.89 are considered to be engaged in the same occupation.

AS 08.89.910 requires the department to adopt regulations necessary to implement AS 08.89.

AS 08.89.990 provides definitions for AS 08.89.

Section 3 authorizes the department to adopt regulations to implement AS 08.89, provided that they do not take effect until the effective date of AS 08.89.

Section 4 provides that AS 08.89.100 (prohibition against unlicensed practice) and AS 08.89.310 (civil penalty for unlicensed practice) take effect July 1, 2018.

Section 5 provides that sec. 3 authorizing the adoption of regulations is effective immediately as provided in AS 01.10.070(c).

Section 6 provides that, except as provided under sec. 4 of this Act, secs. 1 and 2 take effect on July 1, 2017.

LBB:dls
17-113.dls

LEGISLATIVE RESEARCH SERVICES

Alaska State Legislature
Division of Legal and Research Services
State Capitol, Juneau, AK 99801

(907) 465-3991 phone
(907) 465-3908 fax
research@legis.state.ak.us

Research Brief

TO: Representative Chris Tuck
FROM: Katie Spielberger, Legislative Analyst
DATE: April 8, 2015
RE: Licensing Radiologic Technologists
LRS Report 15.348

You asked for information about the practice and licensing of radiology. Specifically, you wished to know which states license radiologic technologists, and what those states typically require for licensing, including education and continuing education requirements. You also wished to know about health risks associated with overexposure to radiation, including any specific incidents regarding harmful effects of overexposure.

Broadly, radiology is the area of medicine concerned with the diagnosis and treatment of diseases and injuries using procedures such as X-rays, magnetic resonance imaging (MRI) scans, computed tomography (CT) scans, nuclear medicine, and ultrasound. Radiologists, the medical doctors who specialize in the field, typically have four to six years of specific post-medical school training in the field.[1] Radiologic technologists are those health care professionals who, under the supervision of physicians, perform diagnostic imaging or administer radiation therapy; in the U.S., the most common education path for radiologic technologists is an associate's degree, according to the Bureau of Labor Statistics.[2] Radiologic technologists may focus on one of many specialized areas of practice—for example, technologists may be radiographers (who use x-ray equipment to produce images), MRI technologists, nuclear machine technologists, sonographers, or radiation therapists (who administer radiation for therapeutic, rather than diagnostic, purposes).

According to the American Society of Radiologic Technologists (ASRT), 39 states regulate radiographers and 35 states regulate radiation therapists. It appears that five states—Alabama, Idaho, Missouri, North Carolina, and South Dakota—and the District of Columbia currently have no regulatory standards pertaining to radiologic technologists. Alaska is among states with minimal regulations.[3]

Based on our review of state licensure information compiled by the ASRT, common requirements for state licensure include successful completion of an exam offered through the American Registry of Radiologic Technologists (ARRT) and/or the state, as well as at least 12 hours of continuing education annually. The ARRT reports that 35 states use their exams for state licensing purposes.[4] In addition to state licensing, many technologists seek certification through the American Registry of Radiologic Technologists (ARRT) by completing a certification and registration exam and reporting continuing education credits every two years.

Precise requirements for licensure vary by state and by practice area—for example, 31 states have specific requirements for radiologic technologists who operate nuclear medicine technology. The ASRT provides detailed information about each state's requirements, including statutory and regulatory citations and links to further state resources, at *http://www.asrt.org/main/standards-regulations/state-legislative-affairs/individual-state-licensure-info*.

---

[1] American College of Radiology, *http://www.acr.org/Quality-Safety/Radiology-Safety/Patient-Resources/About-Radiology*.

[2] U.S. Bureau of Labor Statistics, Occupational Outlook Handbook, Radiologic and MRI Technologists, *http://www.bls.gov/ooh/healthcare/radiologic-technologists.htm*.

[3] ASRT, *http://www.asrt.org/main/standards-regulations/state-legislative-affairs/states-with-licensure-or-certification-laws*. The ASRT also tracks regulatory and legislative developments at *http://www.asrt.org/main/standards-regulations/regulatory-legislative-news*.

[4] American Registry of Radiology Technologies, *https://www.arrt.org/State-Licensing/Licensing-vs-Certification-Registration*.

Alaska Regulations and Legislative History

In Alaska, regulations promulgated in 2009 require operators of medical radiation devices to fulfill a minimum training curriculum and require those responsible for registering the equipment with the state—presumably, the employers of equipment operators—to maintain a record of all training and educational programs the operator attended.[5] As described in 7 AAC 18.230 (attached), the minimum acceptable training curriculum must include the fundamentals of radiation safety, device operation and radiation controls, quality control procedures, and procedures that minimize exposures. In addition, operators of medical fluoroscopic equipment must receive a minimum of 10 hours of instruction in the safe operation of the fluoroscope.[6]

Since 2005, a total of six bills have been introduced in the Alaska Legislature that would require radiologic technologists to be licensed with the State, including the current House Bill 29. Many past bills died in their first committees of referral, with the notable exception of HB 150 in the 24th Legislature (2005-2006), which passed the House.[7] One additional bill, HB 71 in the 25th Legislature (2007-2008), received hearings.

In committee hearings, supporters of these measures primarily cited public health and safety concerns arising from people operating radiologic equipment with insufficient training, particularly the dangers of overexposing patients to potentially carcinogenic radiation.[8] For example, a 2006 state investigation of Bartlett Regional Hospital found the hospital had exposed patients to unnecessary levels of radiation.[9] Clyde Pearce, Chief of Radiological Health, Division of Public Health, Department of Health and Social Services (DHSS), testified in 2007 that the DHSS estimated between 600 and 700 people throughout Alaska were operating radiological equipment without proper training. In response to a 2014 query from our office regarding whether this is still the case, he replied,

> That number is an estimate but since those individuals are not documented anywhere we can't be absolutely certain of the actual number. So the number is as valid now as it was in 2007. The untrained operators work throughout the state. The proportion is higher in rural areas, but the major cities have more offices and small clinics where they hire untrained operators so the overall numbers are not concentrated in any one particular area.[10]

Pushback to the legislation in 2006 and 2007 appears to have come primarily from concerns about potential financial and regulatory burdens on small clinics and their employees. For example, in 2007 testimony, S. Lynn Hornbein, an urgent care physician from Palmer, questioned being able to afford a qualified radiologic technologist and worried that patients would have to visit another facility for radiologic services, thereby increasing the expense of treatment and delaying diagnoses. Sonia Handforth-Kome, the President of the Alaska Primary Care Association (APCA), testified that the APCA did not support the bill as written due to concerns that it would significantly impact the budgets of organizations without guaranteeing patient safety. She further noted the following:

---

[5] Under certain circumstances, registrants may request waivers of certain requirements regarding pre-existing equipment (7 AAC 18.405), but no waivers appear to pertain to requirements regarding employees.

[6] Fluoroscopic equipment passes an X-ray beam through the body to show a continuous X-ray image on a monitor. Its use may result in relatively high radiation doses for patients. More information on benefits and risks associated with the procedure can be found at *http://www.fda.gov/radiation-emittingproducts/radiationemittingproductsandprocedures/medicalimaging/medicalx-rays/ucm115354.htm*.

[7] Other bills introduced that would have required radiologic technologists to be licensed with the State included HB 384 in the 26th Legislature, HB 338 in the 27th Legislature, and HB 323 in the 28th Legislature.

[8] Committee minutes for HB 150 in the 24th Legislature, accessed through *http://www.legis.state.ak.us/basis/get_bill.asp?bill=HB%20150&session=24*, and for HB 71 in the 25th Legislature, accessed through *http://www.legis.state.ak.us/basis/get_bill.asp?bill=HB%20%2071&session=25*.

[9] "State faults hospital for radiation use," Jeannette J. Lee and Matt Volz, *Juneau Empire*, September 20, 2006, accessed at *http://juneauempire.com/stories/092006/sta_20060920021.shtml*.

[10] E-mail communication, July 21, 2014. Mr. Pearce can be reached at 907-334-2107 or through *clyde.pearce@alaska.gov*.

> We have very stringent safety programs in place in Unalaska, [and] I would be more comfortable with a bill that required that we prove . . . our training program when we prove our safety measures and . . . quality measures, than with a bill that simply requires education. I have one certified and two uncertified x-ray techs on staff and there is no discernable quality difference between them. In fact, my two uncertified ones have more experience than our, arguably, safer and better [tech] because they're very stringent about how they follow our safety guidelines; we have to pretty much urge our certified one to follow the safety guidelines.[11]

The only bill to license radiologic technologists for which a fiscal note was created was HB 150 in 2006. The fiscal note estimated annual operating costs of $41,000 for the first year of the program and $35,700 for subsequent years, the bulk of which would fund one half of an Occupational Licensing Examiner position to support the program.[12] Working from the assumption that 400 individuals would seek licensure under the bill, the fiscal note estimated that each licensee would need to pay $294 biennially to cover the costs of the program.[13]

Health Risks from Overexposure to Radiation

Nationally, the use of medical imagining has been increasing, and with this increase has come increased concerns over health risks associated with overexposure to radiation. A 2012 study by researchers at the University of California, San Francisco and the Group Health Research Institute showed that medical imaging is increasing even in those health maintenance organization systems (HMOs) which don't have a financial incentive to conduct them. The study also found significant variation in the doses used by facilities.[14]

A retrospective cohort study of patients examined with CT scans in Great Britain when they were younger than 22 years of age found a positive association between radiation dose from CT scans and the later diagnosis of leukemia and brain tumors. While study authors noted that clinical benefits should outweigh the small risk, "radiation doses from CT scans ought to be kept as low as possible and alternative procedures, which do not involve ionising [sic] radiation, should be considered if appropriate."[15]

We attach a 2010 *New York Times* article, "Radiation Offers New Cures, and Ways to Do Harm," which documents several incidents of accidental overexposure to radiation. Based on extensive research,

> The Times found that while this new technology allows doctors to more accurately attack tumors and reduce certain mistakes, its complexity has created new avenues for error — through software flaws, faulty programming, poor safety procedures or inadequate staffing and training. When those errors occur, they can be crippling.

The article also notes that, with no central oversight agency, such accidents are "chronically underreported."

We hope this is helpful. If you have questions or need additional information, please let us know.

---

[11] House Labor and Commerce Committee Minutes, April 27, 2007, accessed through ***http://www.legis.state.ak.us/basis/get_bill.asp?bill=HB%20%2071&session=25***.

[12] Fiscal Note 2, CSHB 150(FIN) accessed at ***http://www.legis.state.ak.us/PDF/24/F/HB0150-2-2-022706-CED-Y.PDF***.

[13] AS § 08.01.065 requires each licensed profession to cover its own regulatory costs. While costs for training programs for radiological technicians vary, in 2006 testimony on HB 150, Donna Rufsholm of the Alaska Society of Radiology Technology referred to an online program available for $229 that would meet the training standards the bill would have established.

[14] Jason Bardi, "Radiation Exposure From Medical Imagining Has Increased Even at HMOs," June 12, 2012, University of California, San Francisco News, ***http://www.ucsf.edu/news/2012/06/12146/radiation-exposure-medical-imaging-has-increased-even-hmos***.

[15] *Radiation exposure from CT scans in childhood and subsequent risk of leukaemia and brain tumours: a retrospective cohort study*, Pearce, Mark S et al. *The Lancet,* Volume 380, Issue 9840, 499 – 505, accessed at ***http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2812%2960815-0/abstract***.

The New York Times

HEALTH | THE RADIATION BOOM

Radiation Offers New Cures, and Ways to Do Harm

By WALT BOGDANICH JAN. 23, 2010

As Scott Jerome-Parks lay dying, he clung to this wish: that his fatal radiation overdose — which left him deaf, struggling to see, unable to swallow, burned, with his teeth falling out, with ulcers in his mouth and throat, nauseated, in severe pain and finally unable to breathe — be studied and talked about publicly so that others might not have to live his nightmare.

Sensing death was near, Mr. Jerome-Parks summoned his family for a final Christmas. His friends sent two buckets of sand from the beach where they had played as children so he could touch it, feel it and remember better days.

Mr. Jerome-Parks died several weeks later in 2007. He was 43.

A New York City hospital treating him for tongue cancer had failed to detect a computer error that directed a linear accelerator to blast his brain stem and neck with errant beams of radiation. Not once, but on three consecutive days.

Soon after the accident, at St. Vincent's Hospital in Manhattan, state health officials cautioned hospitals to be extra careful with linear accelerators, machines that generate beams of high-energy radiation.

But on the day of the warning, at the State University of New York Downstate Medical Center in Brooklyn, a 32-year-old breast cancer patient named Alexandra Jn-Charles absorbed the first of 27 days of radiation overdoses, each three times the prescribed amount. A linear accelerator with a missing filter would burn a hole in her chest, leaving a gaping wound so painful that this mother of two young children considered suicide.

Ms. Jn-Charles and Mr. Jerome-Parks died a month apart. Both experienced the wonders and the brutality of radiation. It helped diagnose and treat their disease. It also inflicted unspeakable pain.

Yet while Mr. Jerome-Parks had hoped that others might learn from his misfortune, the details of his case — and Ms. Jn-Charles's — have until now been shielded from public view by the government, doctors and the hospital.

Americans today receive far more medical radiation than ever before. The average lifetime dose of diagnostic radiation has increased sevenfold since 1980, and more than half of all cancer patients receive radiation therapy. Without a doubt, radiation saves countless lives, and serious accidents are rare.

But patients often know little about the harm that can result when safety rules are violated and ever more powerful and technologically complex machines go awry. To better understand those risks, The New York Times examined thousands of pages of public and private records and interviewed physicians, medical physicists, researchers and government regulators.

The Times found that while this new technology allows doctors to more accurately attack tumors and reduce certain mistakes, its complexity has created new avenues for error — through software flaws, faulty programming, poor safety procedures or inadequate staffing and training. When those errors occur, they can be crippling.

"Linear accelerators and treatment planning are enormously more complex than 20 years ago," said Dr. Howard I. Amols, chief of clinical physics at Memorial Sloan-Kettering Cancer Center in New York. But hospitals, he said, are often too trusting of the new computer systems and software, relying on them as if they had been tested over time, when in fact they have not.

Regulators and researchers can only guess how often radiotherapy accidents occur. With no single agency overseeing medical radiation, there is no central clearinghouse of cases. Accidents are chronically underreported, records show, and some states do not require that they be reported at all.

In June, The Times reported that a Philadelphia hospital gave the wrong radiation dose to more than 90 patients with prostate cancer — and then kept quiet about it. In 2005, a Florida hospital disclosed that 77 brain cancer patients had received 50 percent more radiation than prescribed because one of the most powerful — and supposedly precise — linear accelerators had been programmed incorrectly for nearly a year.

Dr. John J. Feldmeier, a radiation oncologist at the University of Toledo and a leading authority on the treatment of

radiation injuries, estimates that 1 in 20 patients will suffer injuries.

Most are normal complications from radiation, not mistakes, Dr. Feldmeier said. But in some cases the line between the two is uncertain and a source of continuing debate.

"My suspicion is that maybe half of the accidents we don't know about," said Dr. Fred A. Mettler Jr., who has investigated radiation accidents around the world and has written books on medical radiation.

Identifying radiation injuries can be difficult. Organ damage and radiation-induced cancer might not surface for years or decades, while underdosing is difficult to detect because there is no injury. For these reasons, radiation mishaps seldom result in lawsuits, a barometer of potential problems within an industry.

In 2009, the nation's largest wound care company treated 3,000 radiation injuries, most of them serious enough to require treatment in hyperbaric oxygen chambers, which use pure, pressurized oxygen to promote healing, said Jeff Nelson, president and chief executive of the company, Diversified Clinical Services.

While the worst accidents can be devastating, most radiation therapy "is very good," Dr. Mettler said. "And while there are accidents, you wouldn't want to scare people to death where they don't get needed radiation therapy."

Because New York State is a leader in monitoring radiotherapy and collecting data about errors, The Times decided to examine patterns of accidents there and spent months obtaining and analyzing records. Even though many accident details are confidential under state law, the records described 621 mistakes from 2001 to 2008. While most were minor, causing no immediate injury, they nonetheless illuminate underlying problems.

The Times found that on 133 occasions, devices used to shape or modulate radiation beams — contributing factors in the injuries to Mr. Jerome-Parks and Ms. Jn-Charles — were left out, wrongly positioned or otherwise misused.

On 284 occasions, radiation missed all or part of its intended target or treated the wrong body part entirely. In one case, radioactive seeds intended for a man's cancerous prostate were instead implanted in the base of his penis. Another patient with stomach cancer was treated for prostate cancer. Fifty patients received radiation intended for someone else, including one brain cancer patient who received radiation intended for breast cancer.

New York health officials became so alarmed about mistakes and the underreporting of accidents that they issued a special alert in December 2004, asking hospitals to be more vigilant.

As this warning circulated, Mr. Jerome-Parks was dealing with what he thought was a nagging sinus infection. He would not know until two months later that cancer had been growing at the base of his tongue. It was a surprising diagnosis for a relatively young man who rarely drank and did not smoke.

In time, his doctors and family came to suspect that his cancer was linked to the neighborhood where he had once worked, on the southern tip of Manhattan, in the shadow of the World Trade Center.

Several years before, he had taken a job there as a computer and systems analyst at CIBC World Markets. His starting date: September 2001.

Diagnosis and Treatment

What Mr. Jerome-Parks most remembered about Sept. 11, his friends say, were bodies falling from the sky, smashing into the pavement around him. He was particularly haunted by the memory of a man dressed in a suit and tie, plummeting to his death.

In the days and weeks that followed, Mr. Jerome-Parks donated blood, helped a family search for a missing relative and volunteered at the Red Cross, driving search-and-rescue workers back and forth from what became known as "the pile." Whether toxic dust from the collapsed towers caused his cancer may never be known, though his doctor would later say he believed there was a link.

Mr. Jerome-Parks approached his illness as any careful consumer would, evaluating the varied treatment options in a medical mecca like New York. Yet in the end, what led him to St. Vincent's, the primary treatment center for Sept. 11 victims, was a recommendation from an acquaintance at his church, which had become an increasingly important part of his life.

The Church of St. Francis Xavier in Manhattan, known for its social advocacy, reflected how much Mr. Jerome-Parks had changed from his days in Gulfport, Miss., where he was raised in a conservative family, eventually moving to Toronto and then New York, where he met his Canadian-born wife, Carmen, a dancer, singer and aspiring actress.

In turning to St. Vincent's, Mr. Jerome-Parks selected a hospital that had been courting cancer patients as a way to solidify its shaky financial standing.

Its cancer unit, managed by Aptium Oncology, a unit of one of the world's leading pharmaceutical companies,

AstraZeneca, was marketing a new linear accelerator as though it had Mr. Jerome-Parks specifically in mind. Its big selling point was so-called smart-beam technology.

"When the C.F.O. of a New York company was diagnosed with a cancerous tumor at the base of his tongue," promotional material for the new accelerator stated, "he also learned that conventional radiation therapy could potentially cure him, but might also cause serious side effects."

The solution, the advertisement said, was a linear accelerator with 120 computer-controlled metal leaves, called a multileaf collimator, which could more precisely shape and modulate the radiation beam. (View an interactive graphic demonstrating how multileaf collimators work, and how problems at St. Vincent's caused a fatal overdose.) This treatment is called Intensity Modulated Radiation Therapy, or I.M.R.T. The unit St. Vincent's had was made by Varian Medical Systems, a leading supplier of radiation equipment.

"The technique is so precise, we can treat areas that would have been considered much too risky before I.M.R.T., too close to important critical structures," Dr. Anthony M. Berson, St. Vincent's chief radiation oncologist, said in a 2001 news release.

The technology addressed a vexing problem in radiation therapy — how to spare healthy cells while killing cancerous ones.

Radiation fights cancer by destroying the genetic material that controls how cells grow and divide. Even under the best of circumstances, though, it carries a risk, much like surgery or chemotherapy.

The most accurate X-ray beams must pass through healthy tissue to penetrate the tumor before exiting the body. Certain body parts and certain people are more sensitive to radiation. According to research by Dr. Eric J. Hall of the Center for Radiological Research at Columbia University, even accurate I.M.R.T. treatments, when compared with less technically advanced linear accelerators, may nearly double the risk of secondary cancer later in life due to radiation leakage.

When therapeutic errors enter the picture, the risk multiplies. An underdose allows the targeted cancer to grow, while an overdose can burn and cause organ damage.

While most radiation burns are mild, comparable to a sunburn, larger doses can damage the cells lining small blood vessels, depriving the skin and soft tissue of nourishment. The result is a wound that resists healing.

"Not only do you lose the blood vessels, but the tissue becomes chronically inflamed, which can lead to scarring," said Robert Warriner III, chief medical officer of Diversified Clinical Services, the wound care company.

After soft-tissue injury, bone death in the head and jaw is the second most common radiation injury that Diversified Clinical treats.

At their worst, radiation injuries can cause organ failure and death.

Dr. Salvatore M. Caruana, then a head and neck surgeon at St. Vincent's, gave Mr. Jerome-Parks another option: surgery.

"I wanted him to have laser resection," Dr. Caruana, now at New York-Presbyterian Columbia University Medical Center, said in an interview.

In the end, Mr. Jerome-Parks chose radiation, with chemotherapy.

His wife would later tell friends that she wondered whether St. Vincent's was the best place for him, given that the world-renowned Memorial Sloan-Kettering was nearby. But she did not protest. His mind was made up, and there was no time to lose. His cancer was advancing, and smart-beam technology promised to stop it.

A Plan Goes Wrong

On a brisk day in March 2005, Mr. Jerome-Parks prepared for his fifth radiation session at St. Vincent's. The first four had been delivered as prescribed. Now Dr. Berson wanted the plan reworked to give more protection to Mr. Jerome-Parks's teeth.

Radiation can damage saliva glands, and if saliva stops flowing, tooth decay and infections become a significant risk. Coupled with bone weakness from radiation, the simple act of extracting a tooth can lead to destruction of the lower jaw and ultimately its removal, doctors say.

Dr. Edward Golembe, who directs a hyperbaric oxygen chamber at Brookdale University Hospital in Brooklyn, said he had treated serious radiation injuries to the jaw and called them "a horrible, horrible thing to see."

Tasked with carrying out Dr. Berson's new plan was Nina Kalach, a medical physicist. In the world of radiotherapy, medical physicists play a vital role in patient safety — checking the calibration of machines, ensuring that the computer delivers the correct dose to the proper location, as well as assuming other safety tasks.

Creating the best treatment plan takes time. "A few years ago, we had computers that would take overnight to actually come up with a good treatment plan," said Dr. David Pearson, a medical physicist who works with Dr. Feldmeier's radiotherapy team at the University of Toledo. Faster computers have shortened that process.

"But we still need to be able to verify that what the computer has actually come up with is accurate," Dr. Pearson said. "The first time it tries to solve the problem, it may not come up with the best solution, so we tell it, O.K., these are the areas that need to be fixed."

A few months before Mr. Jerome-Parks's treatment, New York State health officials reminded hospitals that I.M.R.T. required a "significant time commitment" on the part of their staffs.

"Staffing levels should be evaluated carefully by each registrant," the state warned, "to ensure that coverage is sufficient to prevent the occurrence of treatment errors and misadministrations."

On the morning of March 14, Ms. Kalach revised Mr. Jerome-Parks's treatment plan using Varian software. Then, with the patient waiting in the wings, a problem arose, state records show.

Shortly after 11 a.m., as Ms. Kalach was trying to save her work, the computer began seizing up, displaying an error message. The hospital would later say that similar system crashes "are not uncommon with the Varian software, and these issues have been communicated to Varian on numerous occasions."

An error message asked Ms. Kalach if she wanted to save her changes before the program aborted. She answered yes. At 12:24 p.m., Dr. Berson approved the new plan.

Meanwhile, two therapists were prepping Mr. Jerome-Parks for his procedure, placing a molded mask over his face to immobilize his head.

Then the room was sealed, with only Mr. Jerome-Parks inside.

At 12:57 p.m. — six minutes after yet another computer crash — the first of several radioactive beams was turned on.

The next day, there was a second round of radiation.

A friend from church, Paul Bibbo, stopped by the hospital after the second treatment to see how things were going.

Mr. Bibbo did not like what he saw. Walking into a darkened hospital room, he recalled blurting out: " 'My goodness, look at him.' His head and his whole neck were swollen."

Anne Leonard, another friend, saw it, too, on a later visit. "I was shocked because his head was just so blown up," Ms. Leonard said. "He was in the bed, and he was writhing from side to side and moaning."

At a loss for what to do, Ms. Leonard said, "I just stood at the foot of the bed in the dark and prayed."

In a panic, Ms. Jerome-Parks called Tamara Weir-Bryan, a longtime friend from Toronto with nursing experience. Something was not right, she said. Then, as Ms. Weir-Bryan tells it: "She called me again, in agony, 'Please believe me. His face is so blown up. It's dreadful. There is something wrong.' "

At Ms. Jerome-Parks's suggestion, Ms. Weir-Bryan said she called the hospital, identified herself as a nurse and insisted that someone check on Mr. Jerome-Parks. If anything was done, it was not enough.

The next day, the hospital sent a psychiatrist to speak to Ms. Jerome-Parks, according to the hospital. A couple of hours later, her husband received yet another round of radiation.

Overdosed on Radiation

The Times has pieced together this account of what happened to Mr. Jerome-Parks largely from interviews with doctors who had been consulted on the case, six friends who cared for and comforted him, contemporaneous e-mail messages and Internet postings, and previously sealed government records. His wife declined to be interviewed about the case, as did Ms. Kalach, the medical physicist, and representatives of Aptium, Varian and St. Vincent's.

In a statement, the hospital called the case an "unfortunate event" that "occurred as a result of a unique and unanticipated combination of issues."

On the afternoon of March 16, several hours after Mr. Jerome-Parks received his third treatment under the modified plan, Ms. Kalach decided to see if he

was being radiated correctly.

So at 6:29 p.m., she ran a test to verify that the treatment plan was carried out as prescribed. What she saw was horrifying: the multileaf collimator, which was supposed to focus the beam precisely on his tumor, was wide open.

A little more than a half-hour later, she tried again. Same result.

Finally, at 8:15 p.m., Ms. Kalach ran a third test. It was consistent with the first two. A frightful mistake had been made: the patient's entire neck, from the base of his skull to his larynx, had been exposed.

Early the next afternoon, as Mr. Jerome-Parks and his wife were waiting with friends for his fourth modified treatment, Dr. Berson unexpectedly appeared in the hospital room. There was something he had to tell them. For privacy, he took Mr.

Jerome-Parks and his wife to a lounge on the 16th floor, where he explained that there would be no more radiation.

Mr. Jerome-Parks had been seriously overdosed, they were told, and because of the mistake, his prognosis was dire.

Stunned and distraught, Ms. Jerome-Parks left the hospital and went to their church, a few blocks away. "She didn't know where else to go," recalled Ms. Leonard, their friend.

The next day, Ms. Jerome-Parks asked two other friends, Nancy Lorence and Linda Giuliano, a social worker, to sit in on a meeting with Dr. Berson and other hospital officials.

During the meeting, the medical team took responsibility for what happened but could only speculate about the patient's fate. They knew the short-term effects of acute radiation toxicity: burned skin, nausea, dry mouth, difficulty swallowing, loss of taste, swelling of the tongue, ear pain and hair loss. Beyond that, it was anyone's guess when the more serious life-threatening symptoms would emerge.

"They were really holding their breath because it was the brain stem and he could end up a paraplegic and on a respirator," Ms. Giuliano said.

Ms. Lorence added: "I don't really think they expected Scott to live more than two months or three months."

The group was told that doctors were already searching for tips on how to manage what promised to be a harrowing journey not only for the patient and his family, but also for the physicians and staff members involved in his care.

The full investigation into why Mr. Jerome-Parks had received seven times his prescribed dose would come later. For now, there was nothing left to say.

As Dr. Berson rose to leave the room, Ms. Lorence noticed that his back was soaked in sweat.

A Warning Goes Unheeded

Rene Jn-Charles remembers where he was and how she looked on that joyful day — his wife, Alexandra, the mother of their two young children, in brown jeans and a brown top, standing in front of him at the corner of Lincoln Place and Utica Avenue in the Crown Heights neighborhood of Brooklyn.

"Babes," she said. "I have no cancer. I am free."

Her doctor had called with the good news, she said. A seemingly unbearable weight had been lifted. Now after breast surgery and chemotherapy, she faced only radiation, although 28 days of it.

Ms. Jn-Charles had been treated for an aggressive form of breast cancer at a hospital with a very different patient profile from the one selected by Mr. Jerome-Parks. Unlike St. Vincent's, on the edge of Greenwich Village, the Downstate Medical Center's University Hospital of Brooklyn is owned by the state and draws patients from some of Brooklyn's poorer neighborhoods.

Ms. Jn-Charles's treatment plan also called for a linear accelerator. But instead of a multileaf collimator, it used a simpler beam-modifying device called a wedge, a metallic block that acts as a filter.

In the four years before Ms. Jn-Charles began treatment, 21 accidents in New York State were linked to beam-modifying devices, including wedges, records show.

On April 19, 2005, the day Ms. Jn-Charles showed up for her first radiation treatment, state health officials were still so worried about what had happened to Mr. Jerome-Parks that they issued an alert, reminding operators of linear accelerators "of the absolute necessity to verify that the radiation field is of the appropriate size and shape prior to the patient's first treatment."

In legal papers before she died, Ms. Jn-Charles explained how the radiation therapist had told her not to worry. "It's not painful — that it's just like an X-ray," she said she was told. "There may be a little reaction to the skin. It may break out a little, and that was basically it."

'A Big Hole in My Chest'

For a while, all seemed well. Then, toward the end of therapy, Ms. Jn-Charles began to develop a sore on her chest. It seemed to get worse by the day. "I noticed skin breaking out," she would later say. "It was peeling. It started small but it quickly increased."

When Ms. Jn-Charles showed up for her 28th and final treatment, the therapist took her to see Dr. Alan Schulsinger, a radiation oncologist. "He just said that they wouldn't give me any radiation today, and he gave me the ointment and stuff and said go home and come back in a couple of days," Ms. Jn-Charles said.

A couple of days later, she returned. "More skin was peeling off, and going down into the flesh," Ms. Jn-Charles said. Once again, she was told to go home and return later.

On June 8, 2005, the hospital called her at home, requesting that she come in because the doctors needed to talk to her. Fourteen days after her last treatment, the hospital decided to look into the possible causes of her injury, hospital records show.

It did not take long. The linear accelerator was missing a vital command — to insert the wedge. Without it, the oncology team had been mistakenly scalding Ms. Jn-Charles with three and a half times the prescribed radiation dose during each session.

At the hospital, doctors gave her the bad news, and later sent a letter to her home. "I am writing to offer our deepest apologies once again for the devastating events that occurred," Dr. Richard W. Freeman, chief medical officer, said in the June 17 letter. "There is now a risk of injury to your chest wall, including your skin, muscle, bone and a small portion of lung tissue."

Ms. Jn-Charles had been harmed by a baffling series of missteps, records show.

One therapist mistakenly programmed the computer for "wedge out" rather than "wedge in," as the plan required. Another therapist failed to catch the error. And the physics staff repeatedly failed to notice it during their weekly checks of treatment records.

Even worse, therapists failed to notice that during treatment, their computer screen clearly showed that the wedge was missing. Only weeks earlier, state health officials had sent a notice, reminding hospitals that therapists "must closely monitor" their computer screens.

"The fact that therapists failed to notice 'wedge OUT' on 27 occasions is disturbing," Dr. Tobias Lickerman, director of the city's Radioactive Materials Division, wrote in a report on the incident. The hospital declined to discuss the case.

The overdose resulted in a wound that would not heal. Instead, it grew, despite dozens of sessions in a hyperbaric oxygen chamber. Doctors tried surgery. The wound would not close. So they operated a second, a third and a fourth time. In one operation, Ms. Jn-Charles's chest wall was reconstructed using muscle from her back and skin from her leg.

"I just had a big hole in my chest," she would say. "You could just see my ribs in there."

She saw herself falling away. "I can't even dress myself, pretty much," she said. "I used to be able to take care of my kids and do stuff for them, and I can't do these things anymore."

Her husband remembers one night when the children heard their mother crying. They came running, frightened, pleading: "Tell me, Daddy, what happened to Mommy? Say she's O.K., she's O.K."

For more than a year, Ms. Jn-Charles was repeatedly hospitalized for pain and lived with the odor of her festering wound. Meanwhile, her cancer returned with a vengeance.

Several months after her wound had finally healed, she died.

No Fail-Safe Mechanism

The investigation into what happened to Mr. Jerome-Parks quickly turned to the Varian software that powered the linear accelerator.

The software required that three essential programming instructions be saved in sequence: first, the quantity or dose of radiation in the beam; then a digital image of the treatment area; and finally, instructions that guide the multileaf collimator.

When the computer kept crashing, Ms. Kalach, the medical physicist, did not realize that her instructions for the collimator had not been saved, state records show. She proceeded as though the problem had been fixed.

"We were just stunned that a company could make technology that could administer that amount of radiation — that extreme amount of radiation — without some fail-safe mechanism," said Ms. Weir-Bryan, Ms. Jerome-Parks's friend from Toronto. "It's always something we keep harkening back to: How could this happen? What accountability do these companies have to create something safe?"

Even so, there were still opportunities to catch the mistake.

It was customary — though not mandatory — that the physicist would run a test before the first treatment to make sure that the computer had been programmed correctly. Yet that was not done until after the third overdose.

State officials said they were told that the hospital waited so long to run the test because it was experiencing "a staffing shortage as training was being provided for the medical physicists," according to a confidential internal state memorandum on the accident.

There was still one final chance to intervene before the overdose. All the therapists had to do was watch the computer screen — it showed that the collimator was open. But they were not watching the screen, and in fact hospital rules included no specific instructions that they do so. Instead, their eyes were fastened on Mr. Jerome-Parks, out of concern that he might vomit

into the mask that stabilized his head. Earlier, he had been given a drug known to produce nausea, to protect his salivary glands.

Government investigators ended up blaming both St. Vincent's, for failing to catch the error, and Varian, for its flawed software.

The hospital said it "acted swiftly and effectively to respond to the event, and worked closely with the equipment manufacturer and the regulatory agencies."

Timothy E. Guertin, Varian's president and chief executive, said in an interview that after the accident, the company warned users to be especially careful when using their equipment, and then distributed new software, with a fail-safe provision, "all over the world."

But the software fix did not arrive in time to help a woman who, several months later, was being radiated for cancer of the larynx. According to F.D.A. records, which did not identify the hospital or the patient, therapists tried to save a file on Varian equipment when "the system's computer screen froze."

The hospital went ahead and radiated the patient, only to discover later that the multileaf collimator had been wide open. The patient received nearly six times her prescribed dose. In this case, the overdose was caught after one treatment and the patient was not injured, according to Mr. Guertin, who declined to identify the hospital.

"The event at the hospital happened before the modification was released," he said.

Mr. Guertin said Varian did 35 million treatments a year, and in 2008 had to file only about 70 reports of potential problems with the Food and Drug Administration.

Accidents and Accountability

Patients who wish to vet New York radiotherapy centers before selecting one cannot do so, because the state will not disclose where or how often medical mistakes occur.

To encourage hospitals to report medical mistakes, the State Legislature — with the support of the hospital industry — agreed in the 1980s to shield the identity of institutions making those mistakes. The law is so strict that even federal officials who regulate certain forms of radiotherapy cannot, under normal circumstances, have access to those names.

Even with this special protection, the strongest in the country, many radiation accidents go unreported in New York City and around the state. After The Times began asking about radiation accidents, the city's Department of Health and Mental Hygiene reminded hospitals in July of their reporting obligation under the law. Studies of radiotherapy accidents, the city pointed out, "appear to be several orders of magnitude higher than what is being reported in New York City, indicating serious underreporting of these events."

The Times collected summaries of radiation accidents that were reported to government regulators, along with some that were not. Those records show that inadequate staffing and training, failing to follow a good quality-assurance plan and software glitches have contributed to mistakes that affected patients of varying ages and ailments.

For example, a 14-year-old girl received double her prescribed dose for 10 treatments because the facility made a faulty calculation and then did not follow its policy to verify the dose. A prostate cancer patient was radiated in the wrong spot on 32 of 38 treatments, while another prostate patient at the same institution received 19 misguided treatments — all because the hospital did not test a piece of equipment after repairs.

In March 2007, at Clifton Springs Hospital and Clinic in upstate New York, a 31-year-old vaginal cancer patient was overradiated by more than 80 percent by an inexperienced radiotherapy team, putting her at risk for a fistula formation between the rectum and vagina. Afterward, she received antibiotics and treatments in a hyperbaric oxygen chamber.

In 2008, at Stony Brook University Medical Center on Long Island, Barbara Valenza-Gorman, 63, received 10 times as much radiation as prescribed in one spot, and one-tenth of her prescribed dose in another. Ms. Valenza-Gorman was too sick to continue her chemotherapy and died of cancer several months later, a family member said. The therapist who made those mistakes was later reprimanded in another case for failing to document treatment properly.

The therapist not only continues to work at the hospital, but has also trained other workers, according to records and hospital employees. A spokeswoman for Stony Brook said privacy laws precluded her from discussing specifics about patient care or employees.

Other therapists have had problems, too.

Montefiore Medical Center in the Bronx fired a therapist, Annette Porter, accusing her of three mistakes, including irradiating the wrong patient, according to a government report on June 1, 2007. Ms. Porter retains her license.

"We know nothing about that person — zero," said John O'Connell, an associate radiologic technology specialist with the State Bureau of Environmental Radiation Protection, the agency that licenses technologists.

Montefiore declined to comment. Ms. Porter, through her lawyer, denied making the three mistakes.

Fines or license revocations are rarely used to enforce safety rules. Over the previous eight years, despite hundreds of mistakes, the state issued just three fines against radiotherapy centers, the largest of which was $8,000.

Stephen M. Gavitt, who directs the state's radiation division, said if mistakes did not involve violations of state law, fines were not proper. The state does require radiotherapy centers to identify the underlying causes of accidents and make appropriate changes to their quality-assurance programs. And state officials said New York had taken a leadership role in requiring that each facility undergo an external audit by a professional not connected to the institution.

Two years ago, the state warned medical physicists attending a national conference that an over-reliance on computer programs might be leading to mistakes, including patient mix-ups. "You have to be ever-vigilant," Mr. O'Connell said.

The state imposed no punishment for the overdoses of Mr. Jerome-Parks or Ms. Jn-Charles. The city levied fines of $1,000 against St. Vincent's and $1,500 against University Hospital of Brooklyn.

Irreparable Damage

Mr. Jerome-Parks needed powerful pain medicine soon after his overdose.

Yet pain was hardly the worst of it. Apart from barely being able to sleep or swallow, he had to endure incessant hiccupping, vomiting, a feeding tube, a 24-hour stream of drugs and supplements. And apart from all that, he had to confront the hard truth about serious radiation injuries: there is no magic bullet, no drug, no surgery that can fix the problem.

"The cells damaged in that area are not reparable," Ms. Jerome-Parks reported to friends in an e-mail message shortly after the accident. National radiation specialists who were consulted could offer no comfort. Hyperbaric oxygen treatments may have helped slightly, but it was hard to tell.

"He got so much radiation — I mean this was, in the order of magnitude, a big mistake," said Dr. Jerome B. Posner, a neurologist at Memorial Sloan-Kettering who consulted on the case at the request of the family. "There are no valid treatments."

Though he had been grievously harmed, Mr. Jerome-Parks bore no bitterness or anger.

"You don't really get to know somebody," said Ms. Leonard, the friend from church, "until you see them go through something like this, and he was just a pillar of strength for all of us."

Mr. Jerome-Parks appreciated the irony of his situation: that someone who earned a living solving computer problems would be struck down by one.

He grew closer to his oncologist, Dr. Berson, who had overseen the team that caused his injury. "He and Dr. Berson had very realistically talked about what was going to happen to him," said his father, James Parks.

Ms. Jerome-Parks, who was providing her husband round-the-clock care, refused to surrender. "Prayer is stronger than radiation," she wrote in the subject line of an e-mail message sent to friends. Prayer groups were formed, and Mass was celebrated in his hospital room on their wedding anniversary.

Yet there was no stopping his inevitable slide toward death.

"Gradually, you began to see things happening," said Ms. Weir-Bryan, the friend from Toronto, who helped care for him. "His eyes started to go, his hearing went, his balance."

Ms. Giuliano, another of the couple's friends, believed that Mr. Jerome-Parks knew prayer would not be enough.

"At some point, he had to turn the corner, and he knew he wasn't going to make it," Ms. Giuliano said. "His hope was, 'My death will not be for nothing.' He didn't say it that way, because that would take too much ego, and Scott didn't have that kind of ego, but I think it would be really important to him to know that he didn't die for nothing."

Eventually the couple was offered a financial settlement, though it was not a moment to celebrate because it came at a price: silence. With neither of them working and expenses mounting, they accepted the offer.

"I cried and cried and cried, like I'd lost Scott in another way," Ms. Jerome-Parks wrote in an e-mail message on April 26, 2006. "Gag order required."

Now, the story of what happened to Mr. Jerome-Parks would have to be told by his doctors and the hospital, neither of which were part of the settlement. The identities of those who settled were not revealed.

"He didn't want to throw the hospital under the bus," Ms. Leonard said, "but he wanted to move forward, to see if his treatment could help someone else."

Dr. Caruana, the physician who had recommended surgery over radiation, added: "He said to let people know about it."

Friends say the couple sought and received assurances that his story would be told.

Mr. Jerome-Parks's parents were in Gulfport in February 2007, waiting for their house to be rebuilt after it was destroyed by Hurricane Katrina, when they got the news that their son had died.

Afterward, they received a handwritten note from Dr. Berson, who said in part: "I never got to know any patient as well as I knew Scott, and I never bonded with any patient in the same way. Scott was a gentleman who handled his illness with utmost dignity, and with concern not only for himself but also for those around him."

He ended by saying: "I commit to you, and as I promised Scott, everything we learned about the error that caused Scott's injury will be shared across the country, so that nobody else is ever hurt in this way. On a personal level, I will never forget what Scott gave me."

Dr. Berson no longer treats patients, said Dr. Josh Torgovnick, a neurologist who helped care for Mr. Jerome-Parks after the accident. "It drove him to retire," he said, referring to the fatal overdose. The hospital disputes that, saying Dr. Berson still sees patients at the hospital.

Dr. Berson did not respond to several messages seeking an interview about the case. Citing privacy concerns, a spokesman for St. Vincent's, Michael Fagan, said neither the hospital nor Dr. Berson would grant an interview.

In July, Mr. Jerome-Parks's father stood across from the beach in Gulfport where his son's friends had scooped up the sand they sent for his final Christmas.

"He taught us how to die," Mr. Parks said. "He did it gracefully and thoughtfully and took care of everything. Most of us would lose it. He didn't. He just did everything that he had to do, and then he let himself die."

Mr. Parks said he had thought about starting a campaign to make medical mistakes public — but he never did. Nothing would ever come of it, he concluded.

Simon Akam, Andrew Lehren, Dan Lieberman, Kristina Rebelo and Rebecca R. Ruiz contributed reporting.

A version of this article appears in print on January 24, 2010, on page A1 of the New York edition with the headline: A Lifesaving Tool Turned Deadly.

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

FACT SHEET

Office of Public Affairs
Phone: 301-415-8200
Email: opa.resource@nrc.gov

Biological Effects of Radiation

Background

Radiation is all around us. It is naturally present in our environment and has been since the birth of this planet. Consequently, life has evolved in an environment which has significant levels of ionizing radiation. It comes from outer space (cosmic), the ground (terrestrial), and even from within our own bodies. It is present in the air we breathe, the food we eat, the water we drink, and in the construction materials used to build our homes. Certain foods such as bananas and brazil nuts naturally contain higher levels of radiation than other foods. Brick and stone homes have higher natural radiation levels than homes made of other building materials such as wood. Our nation's Capitol, which is largely constructed of granite, contains higher levels of natural radiation than most homes.

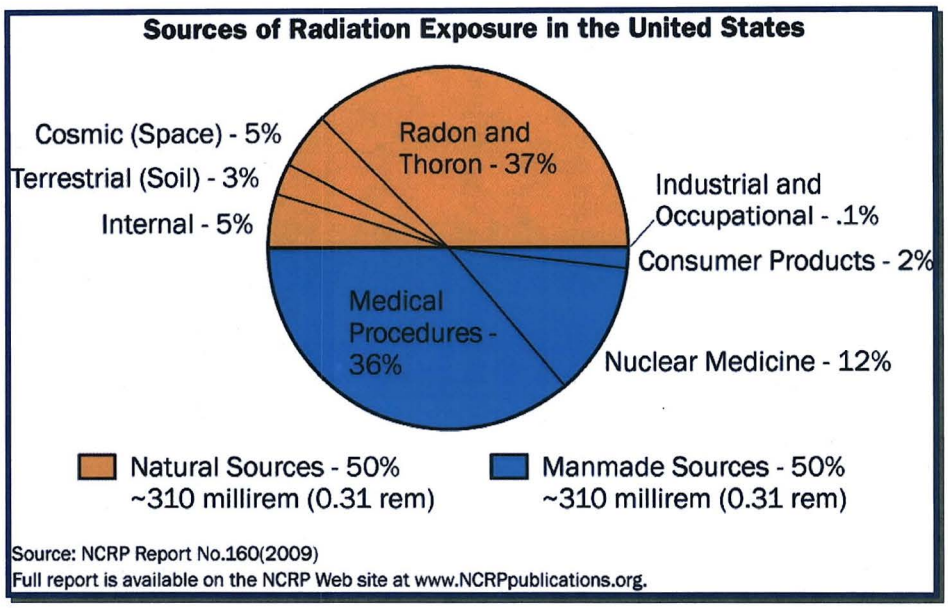
Levels of natural or background radiation can vary greatly from one location to the next. For example, people residing in Colorado are exposed to more natural radiation than residents of the east or west coast because Colorado has more cosmic radiation at a higher altitude and more terrestrial radiation from soils enriched in naturally occurring uranium. Furthermore, a lot of our natural exposure is due to radon, a gas from the earth's crust that is present in the air we breathe.

About half of the total annual average U.S. individual's radiation exposure comes from natural sources. The other half is mostly from diagnostic medical procedures. The average annual radiation exposure from natural sources is about 310 millirem (3.1 millisieverts or mSv). Radon and thoron gases account for two-thirds of this exposure, while cosmic, terrestrial, and internal radiation account for the remainder. No adverse health effects have been discerned from doses arising from these levels of natural radiation exposure.

Man-made sources of radiation from medical, commercial, and industrial activities contribute about another 310 mrem to our annual radiation exposure. One of the largest of these sources of exposure is computed tomography (CT) scans, which account for about 150 mrem. Other medical procedures together account for about another 150 mrem each year. In addition, some consumer products such as tobacco, fertilizer, welding rods, exit signs, luminous watch dials, and smoke detectors contribute about another 10 mrem to our annual radiation exposure.

The pie chart on the following page shows a breakdown of radiation sources that contribute to the average annual U.S. radiation dose of 620 mrem. Nearly three-fourths of this dose is split between radon/thoron gas and diagnostic medical procedures. Although there is a distinction between natural and man-made radiation, they both affect us in the same way.

Above background levels of radiation exposure, the NRC requires that its licensees limit maximum radiation exposure to individual members of the public to 100 mrem (1mSv) per year, and limit occupational radiation exposure to adults working with radioactive material to 5,000 mrem (50 mSv) per year. NRC regulations and radiation exposure limits are contained in Title 10 of the Code of Federal Regulations, Part 20.



Biological Effects of Radiation

We tend to think of biological effects of radiation in terms of their effect on living cells. For low levels of radiation exposure, the biological effects are so small they may not be detected. The body has repair mechanisms against damage induced by radiation as well as by chemical carcinogens. Consequently, biological effects of radiation on living cells may result in three outcomes: (1) injured or damaged cells repair themselves, resulting in no residual damage; (2) cells die, much like millions of body cells do every day, being replaced through normal biological processes; or (3) cells incorrectly repair themselves resulting in a biophysical change.

The associations between radiation exposure and the development of cancer are mostly based on populations exposed to relatively high levels of ionizing radiation (e.g., Japanese atomic bomb survivors, and recipients of selected diagnostic or therapeutic medical procedures). Cancers associated with high-dose exposure (greater than 50,000 mrem) include leukemia, breast, bladder, colon, liver, lung, esophagus, ovarian, multiple myeloma, and stomach cancers. Department of Health and Human Services literature also suggests a possible association between ionizing radiation exposure and prostate, nasal cavity/sinuses, pharyngeal and laryngeal, and pancreatic cancer.

The period of time between radiation exposure and the detection of cancer is known as the latent period and can be many years. Those cancers that may develop as a result of radiation exposure are indistinguishable from those that occur naturally or as a result of exposure to other carcinogens. Furthermore, National Cancer Institute literature indicates that other chemical and physical hazards and lifestyle factors (e.g., smoking, alcohol consumption, and diet) contribute significantly to many of these same diseases.

Although radiation may cause cancers at high doses and high dose rates, currently there are no data to establish unequivocally the occurrence of cancer following exposure to low doses and dose rates – below about 10,000 mrem (100 mSv).

Even so, the radiation protection community conservatively assumes that any amount of radiation may pose some risk for causing cancer and hereditary effect, and that the risk is higher for higher radiation exposures. A linear, no-threshold (LNT) dose response relationship is used to describe the relationship between radiation dose and the occurrence of cancer. This dose-response hypothesis suggests that any increase in dose, no matter how small, results in an incremental increase in risk. The LNT hypothesis is accepted by the NRC as a conservative model for determining radiation dose standards, recognizing that the model may over estimate radiation risk.

High radiation doses tend to kill cells, while low doses tend to damage or alter the genetic code (DNA) of irradiated cells. High doses can kill so many cells that tissues and organs are damaged immediately. This in turn may cause a rapid body response often called Acute Radiation Syndrome. The higher the radiation dose, the sooner the effects of radiation will appear, and the higher the probability of death. This syndrome was observed in many atomic bomb survivors in 1945 and emergency workers responding to the 1986 Chernobyl nuclear power plant accident. Approximately 134 plant workers and firefighters battling the fire at the Chernobyl power plant received high radiation doses – 80,000 to 1,600,000 mrem (800 to 16,000 mSv) – and suffered from acute radiation sickness. Of these, 28 died within the first three months from their radiation injuries. Two more patients died during the first days as a result of combined injuries from the fire and radiation.

Because radiation affects different people in different ways, it is not possible to indicate what dose is needed to be fatal. However, it is believed that 50% of a population would die within thirty days after receiving a dose of between 350,000 to 500,000 mrem (3500 to 5000 mSv) to the whole body, over a period ranging from a few minutes to a few hours. This would vary depending on the health of the individuals before the exposure and the medical care received after the exposure. These doses expose the whole body to radiation in a very short period of time (minutes to hours). Similar exposure of only parts of the body will likely lead to more localized effects, such as skin burns.

Conversely, low doses – less than 10,000 mrem (100 mSv) – spread out over long periods of time (years) don't cause an immediate problem to any body organ. The effects of low doses of radiation, if any, would occur at the cell level, and thus changes may not be observed for many years (usually 5-20 years) after exposure.

Genetic effects and the development of cancer are the primary health concerns attributed to radiation exposure. The likelihood of cancer occurring after radiation exposure is about five times greater than a genetic effect (e.g., increased still births, congenital abnormalities, infant mortality, childhood mortality, and decreased birth weight). Genetic effects are the result of a mutation produced in the reproductive cells of an exposed individual that are passed on to their offspring. These effects may appear in the exposed person's direct offspring, or may appear several generations later, depending on whether the altered genes are dominant or recessive.

Although radiation-induced genetic effects have been observed in laboratory animals (given very high doses of radiation), no evidence of genetic effects has been observed among the children born to atomic bomb survivors from Hiroshima and Nagasaki.

NRC regulations strictly limit the amount of radiation that can be emitted by a nuclear facility, such as a nuclear power plant. A 1991 study by the National Cancer Institute, "Cancer in Populations Living Near Nuclear Facilities," concluded that there was no increased risk of death from cancer for people living in counties adjacent to U.S. nuclear facilities. At the NRC's request, the National Academy of Sciences is currently engaged in a state-of-the-art update to the earlier study. The new study will examine cancer rates in communities around operating and decommissioned nuclear power plants, as well as nuclear fuel cycle facilities.

October 2011

THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Commerce, Community, and Economic Development

BOARD OF CHIROPRACTIC EXAMINERS

P.O. Box 110806
Juneau, Alaska 99811-0806
Main: 907.465.2550
TDD: 907.465.5437
Fax: 907.465.2974
license@alaska.gov

October 2017

Chris Tuck
Representative
House Majority Leader
State Capitol Room 204
Juneau, AK 99801

Dear Representative Tuck,

In reviewing House Bill 89, the Alaska Board of Chiropractic Examiners has noticed several potential areas of conflict. Specifically, the Board feels there is a conflict between House Bill 89 "Licensing Radiologic Technicians", and Senate Bill 69 that was signed into law 05/17/2016 with an effective date of 08/15/2016. It is the interpretation from our reading of HB 89 that it does not provide for a provision of exemption from licensing for Chiropractic Clinical Assistants in Sec. 08.89.100 Unlicensed Practice Prohibited. This is a significant issue because if not addressed, it could lead to confusion, additional wasted hours, time and money, by both the state and well-intended providers, but also the intrusion of one board, into another's governance of its body.

For better clarity on the issue, we feel referencing of SB 69's specific language is crucial. Under Sec. 08.20.168, Chiropractic Clinical assistants may, under the general supervision of a licensed Doctor of Chiropractic, perform diagnostic imaging studies. Under Sec. 08.20.900 Definitions (8), Chiropractic Clinical Assistants can perform chiropractic examinations under the supervision of a licensed Doctor of Chiropractic which includes diagnostic procedures including x-ray and other diagnostic imaging devices.

Under Alaska statute, chiropractic clinical assistants are authorized to take x-rays under the general supervision of a licensed Doctor of Chiropractic. Because of this, and the potential conflict inherent to SB89, the Alaska Chiropractic Society has suggested that the following addition be made to HB89, Sec. 08.89.100 Unlicensed practice prohibited: (7) a chiropractic clinical assistant who uses equipment emitting radiation on humans under the general supervision of a licensed practitioner.

This addition would be the same in HB 89 as the exemption provided for dental assistants in (2) of Sec. 08.89.100 who are allowed to perform x-rays under the direct supervision of a licensed dentist.

The Alaska Board of Chiropractic Examiners, endorses the Alaska Chiropractic Society's suggested addition to allow for Chiropractic Assistants exemption, as they are already governed under current statute, and via the Alaska Board of Chiropractic Examiners itself.

The Alaska Board of Chiropractic Examiners is also very concerned about HB89 Sec. 08.89.100 (b) The licensing or permit requirement in (a) of this section does not apply to a person who is (1) a licensed practitioner, if the practitioner certifies to the department on a form prepared by the department that the practitioner has obtained education or training to ensure the examination or test is performed safely.

Through the professional licensing process with the Board of Chiropractic Examiners, Doctors of Chiropractic already verify their education and training to perform x-rays safely. Sec.08.20.120 Qualifications for license (3) (B) (iii) require 1400hours of preclinical technique, including diagnosis, chiropractic technique, and x-ray. Licensed Doctors of Chiropractic are also required to have 8hours of continuing education every two years in radiology - 12AAC 16.290 Hours of Continuing Education Required (2)(A)eight hours of the total hours required under this paragraph must be devoted to (i) radiographic safety; (ii) radiographic techniques and interpretation; or (iii) diagnostic imaging.

To require Doctors of Chiropractic to further certify on yet another form, potentially pay yet another fee, to yet another division of the department appears illogical, wasteful, and unduly burdensome to both the Doctor and the state.

The Board feels these are very significant conflicts that can be easily averted, if specific language is added and/or modified to allow for the preceding statute and current governance through the Board itself to be maintained in its current form. The board respects and appreciates your commitment to smart and efficient legislation, and clear and concise regulation. We look forward to hearing from you and formally invite you to attend, either in person or telephonically, the next Board of Chiropractic Examiners meeting, on December 15th, 2017, in Anchorage.

Sincerely,

Dr Walter L Campbell
President- Alaska Board of Chiropractic Examiners

January 31, 2017

The Alaska Society of Radiologic Technologists (AKSRT) has been attempting for many years to get legislation passed for state licensure of individuals who perform ionizing radiation procedures in the state of Alaska. This legislation will establish affordable and achievable education and credentialing standards that will ensure competency of all individuals who perform x-ray exams resulting in improved radiation protection and safety for patients and workers and improved patient care.

AKSRT Legislative Affairs Committee members are frequently asked why we need to have licensure in Alaska. The answer is that for every one of the approximately 650 Registered Radiologic Technologists in Alaska there is another person, who is not a registered technologist, performing x-ray exams in the state. Some of these individuals have had formal education in x-ray, some have had a minimum of education and many have had no education at all. To ensure that all patients get the best care possible, we need to make sure all individuals who perform x-ray exams know what they are doing. We need to make certain they know about radiation protection and safety, equipment maintenance and operation, image production and evaluation, radiographic anatomy and positioning procedures. The only way that we can guarantee they know what they are doing is to establish a licensure program in the state that will ensure competency by establishing educational and credentialing standards.

Radiation protection is about safety and the prevention of any undue risk from radiation exposure, it should not be taken for granted as radiation can cause damage to DNA which can increase a person's lifetime risk of developing cancer. In 2010, the FDA recognized this risk and as part of a balanced public health approach launched an initiative to reduce unnecessary radiation exposure from Medical imaging. Forty one states have passed radiology regulations to monitor those who irradiate humans for healthcare purposes.

I encourage the legislature to support education and licensure for individuals who perform x-ray procedures. **HB89 will improve the safety and quality of medical imaging procedures by establishing education and credentialing standards that will ensure competency of all individuals who perform x-ray exams resulting in improved radiation protection and safety for patients and operators and improved patient care.**

Donna Rufsholm, B.S., ARRT (R)(M) CBDT
Alaska Society of Radiologic Technologists
Legislative Affairs Committee Chair

February 1, 2017

HB 89

Honorable Rep. Chris Tuck:

This letter is in response to HB 89 in the current Alaska Legislature, titled "**An Act requiring licensure of occupations relating to radiologic technology, radiation therapy, and nuclear medicine technology; and providing for an effective date.**" This very important document is intended to protect all Alaskans, including patients, device operators and the general public from excessive exposure to ionizing radiation in the health care field. The use of radiation today is a fundamental tool for healthcare practitioners that can reduce pain, reduce health care costs and save lives when used properly. However, in Alaska there are many instances where the use of radiation is abused to the detriment of patients, device operators and the general public because operators are not required to have any formal training, supervision by radiation certified clinical staff or pass a comprehensive radiation safety examination. New technologies have much higher radiation output capabilities yet lack the feedback for untrained operators to recognize that exposures to patient may be as much as up to one hundred times optimum. Excessive exposure to radiation has many deleterious effects including early cataracts, hair loss, cancer (especially breast cancers and leukemia), diminished intellect, shortened life span, missed diagnoses, and other preventable health issues that drive up costs. The key to achieving safer use is quality education of operators by certified training staff.

I urge your support in adopting this legislation to protect Alaskans, including those not yet born.

Thank you.

Clyde E. Pearce
907-350-8076
4610 Campus Circle unit 22
Anchorage, AK 99507

From: Blynn Dahlhamer
To: Rep. Chris Tuck
Cc: Kendra Kloster
Subject: HB89 LETTER OF SUPPORT
Date: Thursday, February 02, 2017 3:18:15 PM

Feb. 1, 2017

After living in the bush for twenty years, I have seen the lack of quality x-rays performed by non-trained personnel and/or clinicians. The positioning was more then sub-standard, the exposure techniques were either to under-exposed or over-exposed. There was never a certainty as to how many exposures the patient received before a diagnostic image was obtained. Most of the personnel in the outlying sub-clinics were only given one (1) week of training before they were allowed to perform x-ray exams.

I had another experience in a bush hospital where a physician assistant (PA) stated that he could take the images himself. After I finished my patient, I checked in on the PA and found that his images were over-exposed and position was not correct. He had decided to increase the technique (thinking this would correct the over-exposer image) and took another picture. I stopped him immediately . This patient was unnecessarily exposed due to lack of proper training.

HB89 will establish compentcy of individuals performing radiation exams through education and credentialing standards. This will improve patient care, radiation protection and safety for the patients and the operators.

Passage of **HB89** will ensure that our children, family and friends will not be exposed to radiation by someone who has had virtually no training in the effects of radiation, positioning, exposure techiques and safety.

Thank you for supporting **HB89** with the educational standards and credentialing.

Blynn H. Dahlhamer R.T. (ARRT) (R)(M)

POB 886

From: Delaney Jones
To: Rep. Chris Tuck
Cc: Kendra Kloster
Subject: House Bill No. 89
Date: Saturday, February 04, 2017 2:17:15 PM

Representative Tuck,

I am writing in support of House Bill No. 89: "An Act requiring licensure of occupations relating to radiologic technology, radiation therapy, and nuclear medicine technology; and providing for an effective date." I was born and raised in Alaska, and am now a first-year student at the University of Alaska Anchorage enrolled in the distance Radiologic Technology program in Juneau.

I believe that adequate education should be a requirement of anyone involved in radiation exposure for diagnostic purposes. An understanding of the potentially harmful effects of radiation and how this can be avoided is essential to ensure the safety of patients and people working in radiologic technology positions. Statewide standards should be required for each and every radiologic technology employee in Alaska. To ensure that proper knowledge and education has been achieved, licensure should be a requirement for employees in Alaska in occupations relating to radiologic technology.

Another reason I support this bill involves the substantial amount of time and money the education program requires. As a current student in this program, I do not think it is fair that I am paying for an education in a state university while this state does not recognize my profession. By the end of this program, I will be more qualified and knowledgeable about radiologic science than other people that are trained on the job, and I will possess the knowledge and training to be able to keep the radiation dose of my patients as low as reasonably achievable. I am going to school to ensure that I receive proper education to perform these skills, and I believe that this should be a requirement.

I appreciate you taking the time to read this, and thank you for sponsoring this bill.

Sincerely,
Delaney Jones

From: claudia@alaskan.com
To: Rep. Chris Tuck
Cc: Kendra Kloster
Subject: Support letter for HB089
Date: Friday, February 03, 2017 12:35:25 PM

Representative Chris Tuck:

I am in support of HB089.

An Act requiring licensure of occupations relating to radiologic technology, radiation therapy, and nuclear medicine technology; and providing for an effective date. <?xml:namespace prefix = "o" ns = "urn:schemas-microsoft-com:office:office" />

Most of those who undergo medical procedures involving radiation exposure assume safeguards are in place when nothing could be further from reality. Sadly, in Alaska there are many instances where the use of radiation is detrimental because there are no requirements. Legally, anyone is allowed to administer radiation "take an x-ray" in this state if they are working in a medical practitioners' office….no minimum education or training required. No education on positioning, radiation protection, safety and shielding for the patient or the person administering the radiation.

New technologies have much higher radiation output capabilities. Untrained or unregulated operators may not know that these exposures could deliver one hundred times the needed dose. Significant aspects of medical imaging and radiation continue to remain unregulated in Alaska. The Basic Operator provision accommodates rural and native concerns while upholding the intent to protect everyone equally from excessive exposure to radiation.

The use of radiation today is a fundamental tool for healthcare practitioners that can reduce pain, reduce health care costs and save lives when used properly. I believe the key to achieving safer use is to require education of operators, especially radiation safety and proper positioning.

I urge your support in adopting this legislation to help lower healthcare costs and protect all who may benefit, including those not yet born.

Please show your support of this important legislation and encourage others to do the same.

Sincerely,

Claudia Tessier

439 Fairway Drive

Fairbanks, AK 99709

From: Jason Grabowski
To: Rep. Chris Tuck
Cc: Kendra Kloster; remcclung@alaska.edu
Subject: SB 89
Date: Friday, February 03, 2017 4:33:58 PM

Dear Honorable Christ Tuck,

I am writing to thank you for supporting SB 89. I understand that this bill has appeared in numerous forms over the past few years with little attention by the State government. Many people are opposed to anything that appears to be an unwarranted government regulation, but in this particular instance, requiring radiologic technologist to be certified is paramount.

X-ray exams are not merely a point and shoot affair. I graduated from UAA with a degree in Radiologic Technology in 2013. My degree and national certification proved that I understood what was necessary for a quality diagnostic exam. An in-depth study of anatomy and physiology, physics, proper patient shielding and positioning, and the creation and transmission of x-rays are essential to patient safety and care.

I've worked in hospital, clinical, and, imaging centers. I have seen first-hand how patients have been terribly served by uncertified x-ray staff. Subpar radiologic exams lead to over-radiated patients, mistakes in diagnosis, and higher cost to patients. For example, a radiologist reading exams from clinics performed by uncertified staff, turned to me and asked rhetorically, "What am I supposed to do with this patient's x-ray films? I can't make a diagnosis from these films!" Not only did the patient have to get an unnecessary dose of radiation, he would have to get another dose to hopefully obtain a useful diagnosis. In my experience, this is not an uncommon occurrence, especially from urgent care and doc-in-a-box facilities.

X-rays exams are almost universally required by insurance companies before requesting an MRI or CT. Often, a quality x-ray exam may rule out the need for an expensive MRI or CT. An improper x-ray exam may force a doctor to order a CT or MRI to obtain a diagnosis. In fact, I believe that a credentialed radiologic technologist can help keep the cost down. I'm sure that insurance companies have studied and understood that quality x-ray exams can save themselves as well as their patients' money. A CT can cost up to 10 times more than an X-ray and expose the patient to 10 or more times the amount of radiation.

It is not only the patients who suffer, but the poorly trained staff. Their misunderstanding of x-ray physics can lead to improper shielding and over-exposure that can lead to cancer, cataracts, and complications to a fetus.

Some legislators may believe that requiring certification will burden healthcare providers with unnecessary labor cost; I believe this cost is more than offset by what is gained in patient care and safety.

From:	Eugene Culp
To:	Rep. Chris Tuck
Cc:	Kendra Kloster
Subject:	Support of HB 89
Date:	Saturday, February 04, 2017 12:56:00 PM

4 February, 2017

To: Representative Chris Tuck and the Alaska Legislature

As a longtime Alaskan resident I am in support of:

HB 89; "An Act requiring licensure of occupations relating to radiologic technology, radiation therapy, and nuclear medicine technology; and providing for an effective date."
Introduced by Representative Chris Tuck

I am concerned that there is no licensure or standards required in Alaska to perform medical imaging (X-rays, etc.) on patients. Meanwhile licensing is required for Haircutters, Tattoos, Pediatrists, etc. This seems to make no sense as it is well known and documented that many people in the nation or world for that matter are over irradiated from medical imaging. Science has proven that long term and over dosage has medical consequences such as cancer and other serious affects on humans. In Alaska anybody off the street can give X-rays, hard to believe in this day. I have also read that Alaska's standard for medical imaging ranks in the lowest in the Nation, not something to be proud of.

I realize that the Legislature in is dealing with Alaska's budget problems, but HB 89 would not pose much cost to the state and would be very beneficial in providing safer medical imaging for all Alaskan residents.

Thanks for you consideration,

Eugene Culp
POB 73127
Fairbanks, AK 99707
907.479.4390
eugene@alaskan.com

From: Eve Kincade
To: Rep. Chris Tuck
Cc: Kendra Kloster
Subject: HB 89
Date: Sunday, February 05, 2017 1:46:29 PM

Representative Tuck,

I am writing to show my support for HB 89. Requiring licensure for radiologic technologists is very important to the safety of both patients and healthcare workers. The training and education that is part of becoming certified is very safety focused, and requires commitment of the students. Not only paying for the education through a state university, but spending the time and effort it takes to get through the program to get certified nationally, and not have that profession recognized by the state does all of the professionals a great disservice.

Thank you for your time,

Eve Kincade

From: RHONDA MERRIHEW
To: Rep. Chris Tuck
Cc: Kendra Kloster
Subject: Regarding H. B. 89
Date: Wednesday, February 08, 2017 9:08:25 PM

Dear Representative Tuck,

As a constituent who lives in your district I want to express my support for H.B. 89. I appreciate the support and help that you have given to this important issue. It is
important that you continue to support H.B. 89. This bill recognizes the training and qualifications of radiologic technologists just like me who provides quality patient
care with awareness toward patient radiation safety. The bottom line is that everyone in our state deserves to be protected from radiation which is a carcinogen and
needs to be administered by a qualified radiologic technologist. Thank you for your attention to this important matter.

Sincerely,

Rhonda Merrihew

Representative Chris Tuck
State Capitol Room 204
Juneau AK, 99801

Dear Representative Tuck:

The legislation HB 89 addressing the licensure of occupational fields related to radiologic technology, radiation therapy, and nuclear medicine is of paramount interest to me because I am a radiologic technologist. This issue directly impacts my profession.

I am primarily concerned with patient care and worry about patient outcomes when individuals who are not adequately trained perform studies that require the use of ionizing radiation. When radiation settings are incorrectly used or when preventable repeat studies are performed the patient ultimately suffers.

Other aspects of this same issue that affect my profession are educational in nature. When an individual is not adequately trained, but performs an imaging study it is a blatant disregard of the knowledge and skill that I worked hard to gain. I believe in the pursuit of knowledge. I paid for an education at a state university, but my profession is not currently recognized by the State of Alaska. I believe that when a person puts in the time and works hard towards a goal they should be recognized for their efforts.

Thank you for your consideration of my viewpoint on this matter. The people of Alaska deserve high quality medical care. This bill provides assurance that Alaskans receive quality care when clinical staff use ionizing radiation in a medical setting. I would like to see this legislation pass and I fully support it.

Sincerely,

Andrew Stefan R.T.(R)(ARRT),
anstefan15@gmail.com

February 9, 2017

The Honorable Representative Chris Tuck
1500 W. Benson Blvd.
Anchorage AK, 99503

RE H.B. 89 Radiologic Technologists – Support

Dear Representative Tuck,

On behalf of the Alaska Society of Radiologic Technologists (AKSRT), an Alaskan professional society representing Radiology Technology students, Radiologic Technologists, Computed Tomography Technologists, Magnetic Resonance Imaging Technologists, Ultrasonographers, Nuclear Medicine Technologists, Radiation Therapists, Mammographers, we would like to affirm and express our strong support for HB 89, the Regulation of Radiologic Technologists.

Our profession provides imaging and therapeutic care using ionizing radiation. We provide instruction to our patients on the risks and effects of radiation. Technologists must determine the appropriate amount of radiation exposure for the part and patient involved. The AKSRT believes to ensure public safety and a professional standard of care it requires regulation to ensure only those trained can safely operate radiation producing equipment.

Some within the community resist passing this bill. However, this places patients, employees, and others as risk of the cumulative effects of radiation. It also does not recognized the continued education required to operate equipment, provide proper patient care in medical imaging, and the initial requirements to enter into the imaging profession.

I am writing as the AKSRT President in support of this legislation and hope you and your colleagues recognize the importance of HB 89. If you have any questions please do not hesitate to call me.

Sincerely,

Robert E. McClung, M.S. R.T. (R)
President, AKSRT

asrt
American Society of
Radiologic Technologists

15000 Central Ave. SE, Albuquerque, NM 87123-3909
505-298-4500 • 800-444-2778 • Fax 505-298-5063 • www.asrt.org

March 6, 2018

The Honorable Chris Tuck
House Majority Leader, Alaska House of Representatives
State Capitol Room 204
Juneau, AK 99801
Via email: Representative.Chris.Tuck@akleg.gov

Re: House Bill 89

Dear Majority Leader Tuck:

The American Society of Radiologic Technologists (ASRT) represents more than 154,000 medical imaging and radiation therapy professionals, including nearly 400 in Alaska. ASRT is pleased to see that Alaska, one of the few states left in our country that does not license radiologic technologists, is considering a bill to create licensure standards for persons who perform medical imaging and radiation therapy procedures on patients. We strongly support this effort.

After reviewing House Bill 89, the ASRT appreciates the opportunity to express to you some of our concerns regarding this proposed legislation. HB 89, Section 2, creates a licensure program for radiologic technologists. To ensure that Alaska's licensure program is consistent with radiologic technologist licensure programs in other states, ASRT recommends that the language currently in HB 89 be replaced with the attached bill draft.

ASRT appreciates the opportunity to provide input on the development of legislation regarding the licensure of radiologic technologists and look forward to working with you and other members of the Alaska Legislature to ensure that the citizens of your state receive radiologic health care from qualified, highly educated and certified radiologic technologists. If you have any questions, please contact me (gmorrison@asrt.org) or Vice President of State Advocacy & Government Relations Christine Lung (cjlung@asrt.org).

Sincerely,

Greg Morrison, M.A., R.T.(R), CNMT, CAE
Associate Executive Director

Cc: Alaska Society of Radiologic Technologists
Rep. Sam Kito, Chair, House Labor and Commerce Committee
(Representative.Sam.Kito@akleg.gov

Attachment: 2018 AK HB 89 ASRT CS.docx

ISCD
THE INTERNATIONAL SOCIETY FOR CLINICAL DENSITOMETRY

955 South Main St., Building C
Middletown, CT 06457 USA

Phone: +1.860.259.1000
Fax: +1. 860.259.1030
E-mail: iscd@ISCD.org
Web site: www.ISCD.org

Testimony of the International Society for Clinical Densitometry
HB 89 "An Act Requiring Licensure of Occupations Relating to Radiologic Technology, Radiation Therapy, and Nuclear Medicine Technology
March 7, 2018
Labor and Commerce Committee

Dear Representative Kito, Representative Wool and members of the Committee:

I am writing on behalf of the International Society for Clinical Densitometry (ISCD) regarding **HR 89, An Act Requiring Licensure of Occupations relating to Radiologic Technology, Radiation Therapy and Nuclear Medicine Technology.** The ISCD shares the goal of insuring competency of individuals performing radiologic procedures, including bone density testing. However, we are suggesting an amendment to the bill to include bone densitometry as an appropriate area for a limited license and to recognize the **ISCD's National Commission for Certfying Agencies (NCCA) accredited technologist certification program (CBDT®)** for individuals performing bone density testing.

Bone density testing is used to diagnose and treat osteoporosis, a disease that results in over 2 million fractures in the United States each year. The need for accurate bone density testing is a critical tool in fighting osteoporosis and reducing the number of these fractures. As Alaska adopts a new framework to regulate radiologic technologists, we urge you to incorporate the ISCD's certification program for bone density testing.

The ISCD is the oldest and largest certifier of bone density technologists in the United States. Our mission is to advance excellence in the assessment of skeletal densitometry through certification, education, and facility accreditation programs. Our certification programs **are designed to ensure competency in the field of bone densitometry.** Successful candidates receive the designation of Certified Bone Densitometry Technologist (CBDT). The CBDT credential meets all the standards for the accreditation of certification programs, as established by the NCCA, and is evaluated annually by the NCCA to ensure continued compliance.

ISCD certification lends assurance to patient and payers that an individual has achieved a high level of competency in the field of bone densitometry and is recognized by other state regulators and Medicare providers (see attached for examples). Our certification program currently has 1,443 Certified Bone Density Technologists (CBDT) in the United States**, including eight people in the state of Alaska.**

As currently drafted, these highly qualified and trained bone density technologists are excluded from the legislation. Specifically, **Sec 08.89.150(b)(3) Qualifications for a limited radiologic imager,** excludes limited licensees from performing bone densitometry.

We urge you to follow the path of many other states and include bone densitometry as an appropriate area to obtain a limited license, provided that individual is certified by either the International Society for Clinical Densitometry or the ARRT in bone densitometry.

At the end of this letter is a more comprehensive description of the ISCD and our Certified Bone Densitometry Technologist program. I would be happy to provide additional information or to speak with you about the legislation. My contact information is listed below.

Thank you very much for your consideration of this important issue.

Sincerely,

Robert Blank, MD, PhD

Description of the International Society for Clinical Densitometry and the Certified Bone Densitometry Technologist program

Certified Bone Densitometry Technologist (CBDT®) is a professional certification accredited by the National Commission for Certifying Agencies (NCCA) in the field of bone densitometry for technologists who *perform* bone

From: Maureen Maxand
To: Rep. Sam Kito
Subject: HB 89
Date: Thursday, March 16, 2017 10:48:22 AM

Good morning,

I am writing out of concern about HB 89. I have been employed at Wrangell Medical center since 1995 as a Radiology tech. I was a Veterinary Tech II before that and was qualified to perform Radiographs. Myself and another employee have done extensive training and did 6 months hands on probationary training prior to being hired. We also did other training through courses and hands on at Providence prior to being able to perform CT studies.

Our hospital has upgraded technologies several times over the years. Going from plain film to single phase to 3 phase to CR to DR we all went through training for each new upgrade. Each upgrade was beneficial to lowering Radiation doses to patients.

HB 89 would have a very negative impact on our community as well as a multitude of other rural areas. Can you imagine having to fly from say Kake to Ketchikan (weather permitting) every time it was suspected a bone was broken or to set a dislocated finger? To rule out constipation vs. appendicitis. The difficulties and expense of retaining a full time or even part time registered Tech for small communities would prohibit small rural clinics and hospitals to provide the best patient care possible.

The State Radiation officer and the Physicist annually oversee and instruct on radiation safety and dose reduction.

For many years the Supervisor (who is licensed) and I took turns every other week on call after hours and weekends. This was not ideal but it worked well until she had a major health issue and I had to leave town at the same time. We were able to hire temp employees to come and fill in, but not being familiar with our procedures and systems, even after being trained it was a complete disaster. We were fortunate not to be sued. It is also a tremendous expense to house and use locums. Wrangell Medical Center spends tens of thousands on traveling nurses and Dr.s as it is. After nearly a decade we hired and trained another person to perform x-ray and share on call schedule. We all also took extensive courses and did hands on training at Providence and with instructor here prior to being qualified to perform CT studies. I have also been the only Tech in town for several weeks at a time on occasions without any problems.

Of course my main concern is self centered in wanting to retain my career until I can retire. I am 58 yrs old and take 250 hours of call a month. I also have a business that will not support me should I lose my job. Wrangell has been my home for nearly 40 years. This bill would destroy my life and countless other dedicated techs around the state. Alaska is a unique state with unique situations that require adaptable solutions. I sincerely hope a compromise can be found to fairly permit long term employees to retain our jobs. Unemployment would not suffice. Please consider all these points and create a wise alternative to pushing this bill though impulsively. Has there ever been a problem or lawsuit in recent years because a tech did harm?

Thank you for your time.

Maureen Maxand

Wrangell Medical Center

From: Crystal Koeneman
To: Tally Teal
Subject: FW: HB 89
Date: Wednesday, March 15, 2017 5:12:05 PM
Importance: High

From: Ann Kramer [mailto:Ann.Kramer@wrangellmedical.org]
Sent: Wednesday, March 15, 2017 4:52 PM
To: Rep. Sam Kito
Cc: Robert Rang
Subject: HB 89
Importance: High

Good Afternoon Representative Sam Kito
I am very concerned about the impact of HB89 will have in my community and others around Alaska.
I have worked as a Registered Radiologic Technologist since 1977. I have spent the past 22 years practicing in Wrangell, Alaska at Wrangell Medical Center.
Prior to my employment the hospital had cross trained the Laboratory Technologists in radiology and ultrasound. There were two other employees that had been cross trained in mammography. All of these staff members did an excellent job with their imaging and documenting.
August of 1994 I was hired because the government changed some of the rules. Medicare and Medicaid would not reimburse the hospital for screening mammograms unless they were performed by a Registered Radiologic Technologist with a Mammography Advanced Certification. Secondly, the Facility must be an ACR Accredited Facility.
I arrived August 1994. Between signing my agreement and traveling from Tennessee the Laboratory Staff had resigned. I was on call 24 hours a day 7 days a week until May 1995. I was the only Technologist on the island, so I began training someone to perform general x-rays. She worked for several years helping with call and vacations. Do to health reasons she had to resign. I trained another man to perform x-rays and help with call. He went on to school for Cardiac and Vascular Technology.
Late 1990's I trained two more individuals to perform x-rays. One of them worked 4 days a week and the other one worked 1 day a week. We all three of us take call for Radiology and CT. I am also on call for Ultrasound. One of them has been in their position for 21 yrs. and the other staff member has been in their position for 17 years.
Neither of them, registered/licensed technologist and I would put up against any registered technologist out there.
They both have taken Radiologic Technology Online courses and completed program through Glacier Medical in Washington State.
We have all 3 successfully completed several course through MIC in Anatomy and Physiology and CT Technology.
The State Radiation Inspector, Clyde Pearce, has given all of us radiation safety training several times over the years.
I haven't heard of any Radiologic Technologist that can't find a job in Alaska. There is a shortage of technologist willing to come to Alaska and that is only going to get worse.
Please seriously consider not backing, supporting or voting for this bill.
Next, if you do support this bill and would vote for it, I believe you should provide for a clause to Grandfather in the individuals who are currently working in the Radiology/CT/Imaging field in Alaska.
Consider a date in the future say 5 years out so we can all prepare for this. The bill reads it is

to become effective July 1 2017 if passed. That's just not time for people to get the necessary training that the bill requires in the real working world. This bill will just be denying a lot of people access to imaging capabilities, delay of care due to time, travel and increased cost. Does the Department of Commerce, Community, and Economic Development even have a licensure Exam for qualified individuals to sit for?
If there is, who can I contact about it?
Thank you
Ann Kramer, ARRT R M, RDMS Imaging Department
ann.kramer@wrangellmedical.org
907 874-7128
Wrangell Medical Center
Imaging Department
