

A CASE OF FELONIOUS USE OF RADIOACTIVE MATERIALS

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Introduction

On January 31, 1974, the Radiation Control Branch, Texas Department of Health Resources (the Agency), was notified by a telephone call from the step-father of a young boy that the boy's father had exposed the son to radioactive materials on several occasions in 1972 and that the exposures had resulted in radiation burns on the thighs, ankle, and thumb. In accord with Agency policy, the step-father was asked to put his accusations in writing. On February 4, 1974, the Agency received a letter from the step-father in which he identified the father and the name of the father's company, outlined the time, places, and methods used in the exposures, and the symptoms and injuries of the child. The name of the plastic surgeon who had made the diagnosis of radiation injury was also given. Attached to the letter were a list of sixteen doctors who had examined and/or treated the child in the previous year and a half, and sketches of the sources, handling tools, and the radiation survey meter that the child had seen.

Following the receipt of the letter and its attachments, the Agency telephoned a physician who had performed numerous medical examinations of radiation injury victims and asked him to talk to the physicians who had seen the boy. He was requested to examine the boy if in his judgment the previous diagnosis of radiation injury had merit. The physician, who at the Agency's request had been sent a copy of the letter, said that the plastic surgeon who had made the diagnosis was extremely qualified to recognize such an injury since he had performed plastic surgery on many cancer patients who had undergone radiation therapy.

Although a check of the Agency's radioactive materials licensing files did not reveal that a license had ever been issued in the father's name or in the name of the father's company as given to us by the step-father, one of the Agency's inspectors recognized the father's name. He recalled having met the father during an inspection of a license issued in the name of a different company. A review of that company's license file revealed that the company had been first licensed on November 18, 1971, to possess and use a sealed source containing one curie of ^{137}Cs for oil and gas well logging.¹ By two subsequent amendments, authorization had been granted to possess and use a maximum of two sealed sources each containing two curies of ^{137}Cs .^{2,3} The review also confirmed that the father, a petroleum engineer, was the only named user on the license.

Shortly after these discoveries, the physician that the Agency had contacted concurred in the diagnosis of radiation injury following his examination of the boy.

On February 7, 1974, the Agency, realizing that the laws⁴ and regulations⁵ concerning radiation were inadequate to deal with what was felt to be a felony crime, notified the District Attorney in Houston, Harris County, Texas, of the allegations and the Agency's findings up to that time.

Upon review of the Agency's findings and the medical history of the boy, the District Attorney decided that a felony had been committed and assigned an Assistant District Attorney from his Special Crimes Bureau to lead the District Attorney's investigation and prosecution of the case.

Investigative Phase

From this point on all aspects of the Agency's investigation were coordinated with the District Attorney's office, and the investigation, discovery of witnesses, and the development of evidence were approached very cautiously. The Agency was acutely aware of the fact that none of its inspectors had had any experience or training in the investigation of criminal offenses and strove to conduct the investigation carefully. All proposed investigative actions were approved by the District Attorney's office in order to protect the admissibility of any evidence that the Agency might uncover.

Likewise, the Assistant District Attorney assigned to the case realized that the District Attorney's staff lacked experience in the fields of health physics, radiation effects, and the regulations, procedures, and practices of a radioactive materials regulatory program and had minimal knowledge of how radioactive sources were manufactured or how they were used in the oil and gas well logging industry.

Because both the Agency and the District Attorney's office each realized its own limitations, the files of each agency were opened to the other agency and the findings, plans, and ideas of each were freely and candidly discussed.

During the investigative phase, which began with the notification of the District Attorney's office and continued up to and during the trial, the investigation of possible sources of evidence were divided by categories of people being questioned. The District Attorney's staff questioned and developed evidence from the victim, his family, and doctors who had examined or treated the victim while the Agency's inspectors interviewed source manufacturers and oil and gas well loggers. While this pattern of investigation developed, there was never any formal division of effort nor was any such division ever discussed; it just occurred.

It should be noted that during this time, the Agency outwardly maintained a normal relationship with the father. In particular, the routinely scheduled inspection was performed and the radioactive material which he was licensed to possess and use was not impounded or confiscated until after he had transferred the material to another company and had asked that his license be terminated. While it may seem rather strange not to have impounded or confiscated the radioactive material prior to that time, an unusual circumstance regarding his storage location allowed the Agency to do it without further jeopardizing his son. The only authorized storage location for the radioactive material was at another licensee's facility, and that licensee had agreed to notify the Agency immediately if the father came to get the sources.

Indictment and Trial Phase

On May 2, 1974, a grand jury indicted the father on five felony counts involving the use of radioactive material:

1. Assault with intent to murder.
2. Castration.
3. Disfigurement.
4. Assault with intent to maim.
5. Intentionally causing injury to a minor.

The same day the father was arrested. Bail was set at \$50,000.00, but was later reduced to \$10,000.00, and he was released on bond.

The case was heard in the 179th District Court of Harris County, Texas, by a six-man, six-woman jury beginning March 31, 1975. During the course of the trial, the prosecution presented sixteen witnesses including the boy, his mother, his younger brother, two present and one former Agency staff members, a plastic surgeon, a radiologist, a pediatric urologist, a pediatric endocrinologist, a radiation biophysicist, a psychiatrist, a radiation pathologist, a dermatologist, a source manufacturer, and a drilling and oil well service contractor. The defense presented seven witnesses including the defendant, two medical records clerks, a neighbor, an oil well supply contractor, a psychiatrist, and a health physicist.

From trial testimony, it was determined that the father and mother of the boy were married in December 1955 and that out of this marriage there were two children, the victim and a younger brother. The parents were divorced in May 1970 but remarried in July 1970 and were subsequently divorced again in February 1971. The mother of the boy had married the boy's step-father in December 1971. The terms of the divorce permitted the father visitation rights with the two boys on two weekends each month, normally the first and third weekends.

Evidence introduced at the trial indicated that on at least five and possibly as many as eight occasions between April 1972 and October 1972, the father irradiated the son by placing the ¹³⁷Cs sources on or near the boy's body. The exposures occurred during weekend visitations.

The first known irradiation occurred in April 1972 while the boy, age 11, was visiting the father's apartment. On this occasion, the boy was left alone in the apartment to watch television after being told to listen to the television only with earphones. Inside each earphone, the boy found a "little metal cylinder." In court, he identified "dummy" sources that had been prepared as resembling the cylinders he had seen.

During the victim's first visit with his father in July 1972, he was asked to drink a glass of orange juice with a pill dissolving in it. Shortly afterwards, he went to sleep on the couch in the den. Upon awakening, he found two cylinders in a thin sock under the cushion on which he had been sleeping. At this time, he also saw a source handling tool on a nearby end table. The following morning the boy was nauseous, and vomited.

At the second visit during July 1972, the child was again given orange juice with a dissolving pill in it. Because there was a party in the apartment, the boy was sent to sleep in the bedroom. Upon awakening the next morning, he heard a rattling noise in the pillow. A medicine bottle containing three metal cylinders was found in the pillow. The father and younger brother were found to be sleeping in another apartment. Again the boy was nauseous. About this time, the boy's thighs had developed what was then believed to be a rash.

The next known exposure occurred during August 1972. By this time, the lesions on the boy's thighs had become more serious, and he was under the care of a doctor. During the visit, the boy was instructed to lie on a couch while the father and younger brother went out. He found a sock with two cylinders in it under the cushion of the couch. After the father's return, the boy saw the father carry the sock at arm's length out to his car.

The last known exposure occurred at a motel during a visitation in October 1972. Again the child was given orange juice with a dissolving pill in it before going to bed. When he awoke, he found a sock with two cylinders in it draped over his legs. The father was found sleeping in his car.

The lesions on the boy's thighs and legs became progressively worse and he was under continual doctor's care. The causative agent for the lesions could not be determined, and they failed to respond to treatment. Finally in December 1973, a plastic surgeon was called upon to perform skin grafts. Upon examining the lesions, he diagnosed the injury as ". . . radiation necrosis. Necrosis ulceration due to radiation."⁶

The lesion on the boy's ankle (Figure 1) revealed ". . . deep indolent ulceration. . ."⁷ and ". . . a tendon which was dead due to the effects of the radiation there."⁸ The lesions on the boy's thighs (Figure 2) showed extensive ulceration and scarring with telangiectasia.

Following diagnosis of the causative agent as radiation (and it should be noted that the diagnosis was made prior to any knowledge of the possibility that the boy could have been exposed), testicular biopsy revealed that the right testicle had been replaced with fibrous tissue and that the left testicle was a small, hard, non-functioning testicular body. Further medical testing revealed that "he had no functioning testis"⁹ which "In the medical term . . . is castrated"¹⁰ and that as a result, "he will need testosterone replacement for the rest of his life."¹¹

Chromosomal analyses were performed by expert witnesses for both the prosecution and the defense. The testimony of the prosecution's witness revealed that six multihit aberrations including three reciprocal translocations identifiable only by karyotypic analysis were noted in 200 lymphocytes studied. Although the defense witness' analysis showed only three multihit aberrations at the time of the trial, his analysis had not included karyotyping since he had had less than three weeks to perform his analysis prior to presenting his testimony. Subsequent re-evaluation which included karyotyping has shown perfect agreement. It is interesting to note that the prosecution's witness obtained her sample of blood approximately four years post-irradiation, and the defense's witness obtained his sample a year later.¹²

Following the conclusion of testimony, the charges of assault with intent to murder, assault with intent to maim, and intentionally causing injury to a minor were dropped by the prosecutor. The last two which had been felonies under the old penal code were dropped because the new Texas penal code¹³ had reduced these offenses to misdemeanors. The assault with intent to murder was dropped because the prosecution felt that it was unable to prove beyond a reasonable doubt that the father's intention was to kill the boy rather than just injure him, and that if convicted on that count, the decision would be subject to reversal by the appellate court.

On April 16, 1975, the case went to the jury. After deliberating ten hours, the jury on April 17, 1975, returned a verdict of guilty to the charge of castration. Since the father, as permitted under Texas law,¹⁴ had selected at the onset of the trial for the jury to assess the punishment if convicted, the jury was then sent out to set the punishment. After deliberating only an hour, the jury assessed the maximum punishment for the offense, ten years in prison and a fine of \$5,000.00. On May 16, 1975, the sentence was formally pronounced, and the father's visitation rights with that son were revoked.

Post-Conviction Developments

Prior to the trial, the boy had undergone eleven plastic surgery operations and faces the possibility of several more as he matures. In addition to the testosterone replacement medication to prevent eunuchism with resulting obesity and to retain masculine characteristics, he faces an undetermined increased likelihood of developing leukemia.

Following the pronouncement of sentence, the father filed an appeal with the Court of Criminal Appeals of Texas, the final appellate court in Texas for criminal cases. Texas law permits persons sentenced to prison terms of less than fifteen years and a day to post an appeal bond and remain free until the appeal is heard. The father posted a \$10,000.00 bond and is now free pending appeal. The Court of Criminal Appeals of Texas is expected to review the case by June 1977.

Although the father and mother are presently involved in litigation regarding child support, the father still has visitation rights with the younger brother, albeit the visitation must occur in the mother's home or at such other places as she designates under her supervision.

Conclusions

This type of criminal case presents unique problems for the prosecutor because it involves dealing with the aura of mystique and fear that surrounds anything radioactive in the eyes of the ordinary layman. To people used to seeing the immediate results of an assault on an individual, the concept of an assault which results in observable injury only after a latent period of weeks, months, and even years following the assault and may be cumulative in effect is difficult to comprehend. The prosecution has to learn a new vocabulary and new physical concepts and must rely upon the use of expert witnesses from outside the normal law enforcement and prosecution organizations. In this particular case, no witnesses from the established law enforcement or prosecution organizations were called to testify. The payment of fees of expert witness and thereby the quality of their expert testimony, can be a major concern; however, in this particular case almost all of the prosecution's expert witnesses declined to accept their professional fees.

To the Radiation Control Regulatory Agency, the criminal nature of the case posed problems due to its staff's lack of training and experience in criminal law and criminal investigation procedures and techniques. The Radiation Control Agency must cooperate closely with the prosecution in the investigation, the preparation of exhibits, and the discovery of expert witnesses. It must also be willing to devote a large amount of staff, time, and a significant amount of travel and per diem money throughout what can be an extended period of time. Normally the people assigned to such an investigation should be persons with a broad base of training and experience and numerous personal contacts among the Agency's licensees.

While this particular case has been successfully prosecuted and we feel will be upheld in the appeals court, it has raised six significant questions:

1. Does the licensing procedure to obtain radioactive materials need to be more stringent so that a vigorous examination is made of the applicant's background and actual necessity to possess radioactive materials?
2. Since the injuries went unrecognized for a long period of time even though the boy was seen by numerous respected doctors would the cause of death have been identified if a lethal exposure had occurred and the boy had died prior to the development of lesions?
3. Along that same line, have there been other, perhaps unnoted, intentional criminal uses of radioactive materials?*
4. How many apparently "crank" calls regarding radiation have been summarily disregarded without adequate investigation into the accusations?
5. Do the laws concerning the possession and use of sources of radiation need to be rewritten to include specific penalties for their criminal use, especially considering the normal statute of limitations that exists for assaults with other weapons?
6. Are present criminal laws adequate to deal with the radiation-induced leukemias and other cancers that may appear years after the exposure? Suppose in this case, the father's conviction is overturned on appeal and the child later develops and dies from leukemia, should not he be indicted on some murder charge? The American prohibition against double jeopardy seems to rule out further indictment.

* The authors know of no other conviction, or even indictment, for the intentional criminal use of a source of radiation and would appreciate any other indictments and/or convictions being brought to their attention.

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REFERENCES

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3. Texas State Department of Health Radioactive Material License No. 8-1655, Amendment No. 2, dated August 2, 1972. Texas Department of Health Resources, Austin, Texas.
4. Texas Radiation Control Act, Article 4590f, Revised Civil Statutes, State of Texas.
5. Texas Regulations for Control of Radiation, Texas Department of Health Resources, Austin, Texas.
6. State of Texas vs. Kerry Andrus Crocker, 179th District Court of Harris County, Texas, Court Transcript (Case No. 212, 734), p. 815.
7. Ibid., p. 818.
8. Ibid., p. 817.
9. Ibid., p. 1076.
10. Ibid., p. 1077.
11. Ibid., p. 1079.
12. Stewart C. Bushong, personnel communication (telephone), January 12, 1977.
13. Texas Penal Code as revised, effective January 1, 1974.
14. Article 37.07, Texas Code of Criminal Procedures.



Figure 1. Lesion on Leg Near the Ankle

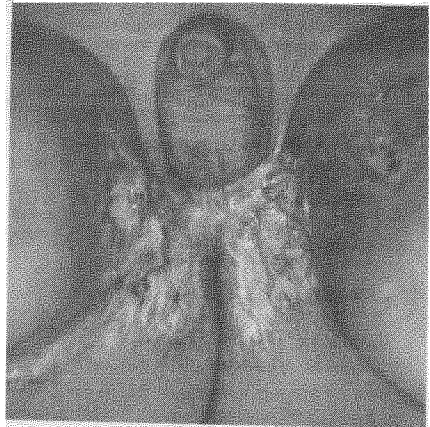


Figure 2. Lesions on Thighs and Perineum