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L.K. Thompson
Administrator

September 28, 2006

U.S. Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406-1415

Attn: Regional Administrator

Re: License No. 37-13831-01; Docket No. 03003203; EA-04-215

As required by Notice of Violation and Confirmatory Order dated October 14, 2005, The Penn State Hershey Medical Center hereby advises NRC of completion of items outlined in the settlement agreement of August 23, 2005. As per the agreement:

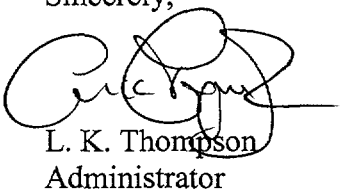
1. An article was prepared and published in *Operational Radiation Safety*, the supplement to *Health Physics*. A copy of the article is enclosed.
2. An article was prepared and submitted to the journal, *Nuclear Medicine Technology*. However, the reviewers deemed the article to be too similar to the article published in *Operational Radiation Safety* and rejected it.
3. On October 12, 2005 an informational notice describing the incident, corrective actions, subsequent investigation, Alternate Dispute Resolution and agreement was posted on the Listserve, AMRSO. This resulted in productive discussion lasting several days and many requests for the form that we developed to notify and document notification of all nuclear medicine technologists of our policy regarding nuclear medicine procedures for staff. The form was posted to the listserve for all to use.
4. The posting and subsequent discussions on the AMRSO Listserve led to a "Watercooler" article being published in *Operational Radiation Safety* (copy enclosed).
5. As required, our Chief of Nuclear Medicine made an appropriate presentation to the ACMUI during the week of October 24, 2005.

6. Presentations addressing item 4 of your October 14, 2005 notification were made by either our RSO or Associate RSO at:
   A. The ACMP Annual Meeting, Las Vegas, NV, June 5-9, 2006.
   B. The Health Physics Society's 51st Annual Meeting, Providence, RI, June 25-29, 2006.
   C. The Medical RSO Training Program at Oak Ridge Institute for Science and Education, Oak Ridge, TN, August 21-25, 2006.
   D. The Annual Big 10 RSO Conference, University Park, PA, September 25-27, 2006.

We are confident that you will agree that we have completed all the requirements of the settlement agreement.

If you have any questions regarding the above, please contact, immediately, our Radiation Safety Officer, Kenneth L. Miller, at (717) 531-8027.

Sincerely,



L. K. Thompson
Administrator

CC: Douglas Eggli, M.D.
Edward Podczaski, M.D.

Operational Topic

Lessons learned from an incident involving an unauthorized injection of radioactive material are presented.

Nuclear Medicine Technologists and Unauthorized Self-Injections

*K. L. Miller, S. H. King, D. F. Eggli, and L. K. Thompson**

Abstract: *An Office of Investigation (OI) investigation by the U.S. Nuclear Regulatory Commission (NRC) determined that, on three separate occasions over the past 10 years, technologists in one licensed nuclear medicine program were injected with radiopharmaceuticals without Authorized User knowledge or approval. The most recent instance, the one that precipitated the investigation, was discovered by the licensee and self-reported to the NRC; the other two instances were discovered during the OI investigation and came as a complete surprise to the licensee. In a mediated Alternative Dispute Resolution (ADR) involving the licensee, a professional, independent mediator and representatives of the NRC, an agreement was worked out whereby the licensee would admit to the violations and work with the NRC to inform other licensees that this is not an acceptable practice and that there are additional precautions that licensees can and should take to assure that such violations do not happen on their watch. Health Phys. 90(Supplement 1):S24–S28; 2006*

Key words: *operational topics; nuclear medicine; injection; radiopharmaceuticals*

INTRODUCTION

Approximately 16 months ago, an incident occurred in the Nuclear Medicine Department that was mind-boggling and came as a complete surprise. A female technologist (hereinafter referred to as the "brain scan tech") had, weeks before, asked the Authorized User (AU) if she could have a brain scan done on herself. After hearing her reasons for the request, the AU told the brain scan tech that her symptoms were not indications for a brain scan. She was also told that appropriate disciplinary action would be taken if she was caught performing an unauthorized scan.

Several weeks later, a student technologist in the department was eagerly awaiting a patient who was to have a brain scan as the student was approved to do her brain scan competency on the patient. The patient failed to show up for her scheduled brain scan, the dose was logged into the waste, and the student technologist was dejected and a bit vociferous in lamenting the missed opportunity. At that time, the brain scan tech walked by and asked the student what was wrong. The brain scan tech then told the student that the student could inject her and do her comp on her since she needed a brain scan anyway and the dose was just going to waste.

The student realized that this did not sound right, but, as with most students who are intimidated by staff technologists, she did not carry her arguments very far. The brain scan tech assured her that "If there is any flack, I will take the heat." Before the study was even completed, the student tech happened to walk by the Chief Technologist and mentioned, "I just injected the brain scan tech so I can do my brain comp." The Chief Technologist verified what had happened and immediately reported the incident to the AU. The AU called the brain scan tech to his office to verify what had been done. When he told the brain scan tech that he would have to report this to the RSO, he was threatened by the brain scan tech. He notified the RSO, and the RSO immediately, both verbally and in writing, revoked the brain scan tech's radioisotope privileges. The brain scan tech was asked to leave the facility and did so. An emergency meeting of the Human Use Radiation Safety Committee was held within 24 hours, and the Committee decided to make the revocation of radioisotope privileges permanent. It was further decided that although the regulations did not require reporting of this event, the licensee would voluntarily report it to the NRC.

The licensee immediately appointed an ad hoc committee to thoroughly investigate this incident. Everyone in Nuclear Medicine was interviewed to determine if this is a widespread

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problem. The investigation determined that this was not a widespread problem within the department and that all nuclear medicine technologists were aware that it was unacceptable to do injections that were not approved by the AU. All stated that this was a rigorously discussed part of their training that was reemphasized in on-the-job orientation. However, during the interviews, one senior technologist questioned the level of concern over this incident, stating, "What's the big deal? The radiation involved is no more than a chest x ray!"

The reporting to the NRC was quickly followed by a three-day inspection of the licensee's program, which found no deficiencies, and an investigation by the OI that lasted for more than a year.

Prior to this incident, the licensee was convinced that it had controls and processes in place to assure that employees understood the policies and procedures and would never violate them. Apparently this problem is not unique to a single licensee (U.S. NRC 1998, 1999, 2001, 2002, 2005) and should be a concern for all nuclear medicine licensees.

When the OI investigation was completed, the licensee was notified of three incidents that had allegedly occurred over the past 10 years. The licensee was given the opportunity to either participate in a mediated Alternative Dispute Resolution (ADR) process involving the licensee, a professional, independent mediator, and representatives of the NRC or to participate in a pre-enforcement hearing. The licensee opted for the ADR.

At the ADR, hours were spent in responding to charges and reviewing the organizational controls, paperwork, and processes that are in place to assure that employees are made aware of the policies and procedures and that they would never violate them. In the end, the licensee conceded that these incidents occurred despite how good their program was and that there was a need to revisit their assumptions, reevaluate their program, reemphasize their training, and do a better job of continuous self-assessment as a licensee. In an agreement worked out at the ADR meeting, the licensee agreed to (a) admit to the violations, (b) work with the NRC to inform other licensees that unauthorized self-injections of radiopharmaceuticals is an unacceptable practice that constitutes willful misconduct, and (c) emphasize to other licensees the steps that can and should be taken to assure that such things will not happen on their watch.

LESSONS LEARNED

Be aware

Licensees must be aware that it is possible for technologists to hide willful violations of NRC (or Agreement State) regulations.

Eliminate complacency

There is a continuous need for self-assessment as an organization. No program is ideal, and no program is so good that there is no room for improvement. Things that worked well last year are not necessarily the best approach for tomorrow. A good program has to be a dynamic program, one that incorporates constant reevaluations to determine if the ways things are being done are the best ways. Complacency has led to the downfall of nations, and it can lead to the downfall of radiation safety programs as well. The status quo requires continuous examination, challenge, and modification. There are always better, more effective ways of doing things. Avoid pitfalls, such as the development of a form (e.g., an audit form) and then using that form for ever after without challenging its usefulness, its appropriateness, or its effectiveness. "Because we have always done it that way" is no excuse or justification for doing it that way today or tomorrow. The fact that something is mentioned in one training program does not necessarily mean that the person trained will remember it for always. Retraining on a periodic basis is a must for all individuals involved in the handling and use of radiation sources.

Revisit assumptions

Children learn early that the word "assume" can be broken up into individual words that indicate how making assumptions can make everyone look foolish. Never assume. Always verify. Do not assume that a lecture or training program was understood and absorbed. Design a test that will evaluate and indicate how much of the information was retained and how well it was understood. Such tests can be written tests, oral tests, or observations of the individual doing the things that were emphasized in the training. Prior to the incident discussed above, it was assumed that every trained and certified nuclear medicine technologist knew that ANY administration of a radiopharmaceutical had to be under the approval and supervision of an AU. It was assumed that all nuclear medicine technologists knew they would be committing willful misconduct if they injected themselves with radiopharmaceuticals without the knowledge of or approval of the AU. It was assumed it would be insulting to ask nuclear medicine technologists to sign a policy statement acknowledging that they knew it was improper to inject themselves without approval from or supervision by an AU (see Fig.1 for such a form that has been adopted since the above incident). It was assumed that nobody in their right mind

would ever inject themselves with radiopharmaceuticals without approval from and supervision by an AU. It was assumed that if this were reviewed in their initial training that it would never have to be repeated to them. It was assumed that because people were hired as professionals, they would never commit stupid or non-professional acts. Clearly, a lot of wrong assumptions were made!

Reemphasize training

Training is an integral part of any good radiation safety program. Training must be given when employees are first hired and repeated at intervals necessary to accomplish the objectives of the training. Training must be dynamic. Training must change constantly to make it more interesting and to assure that it is germane to program changes while stressing issues of particular concern. Basic training must be repeated as often as necessary to assure a high level of understanding by the audience. Attendance at training programs should be mandatory. Attendance should be recorded and the attendance logs should be examined to assure that no one who needs training is managing to avoid it. Consideration should be given to testing at the end of each training program to assure that the material presented has been understood and accepted. Computers have changed the way we all work. However, computer-based training is no substitute for training by the radiation safety staff. Computer-based training quickly becomes stale if it is not upgraded frequently, and computer-based training lacks a personal touch and the opportunity for interactions between the radiation safety staff and the radiation/radioisotope users.

Training should be rigorous enough to assure that there are no misunderstandings about the rules and procedures and the consequences of violating them. When technologists feel that they can self-inject themselves or inject their fellow technologists with no potential consequences, then their training has not been sufficiently rigorous. Radiation workers who observe wrongdoings or deviations from good radiation safety practice have an obligation to bring this to the attention of their administrators and the radiation safety office.

Division of Nuclear Medicine
Policy on performing imaging studies on Nuclear Medicine or Radiology staff

Whenever a Nuclear Medicine or Radiology staff member requires a nuclear medicine procedure, the following policy must be followed:

1. Nuclear Medicine procedures will ONLY be performed for Radiology staff members upon request from a licensed practitioner.

2. A written directive from a Nuclear Medicine Authorized User is required for ANY nuclear medicine procedure performed on a Nuclear Medicine or Radiology staff member. An electronic directive in the Radiology Information System (RIS) will be considered equivalent.

3. The written directive must contain the following elements:
   A. A clear and concise description of the medical necessity.
   B. The radiopharmaceutical to be used, the dosage, and route of administration.
   C. The imaging protocol to be followed.
   D. The signature of the authorized user.

4. The nuclear medicine technologist performing the radiopharmaceutical injection or administration must personally review the written directive with the authorized user who signed it.

5. The radiopharmaceutical administered must be logged into the Nuclear Medicine Information System (NMIS) radiopharmacy computer by either the technologist administering the dosage or by the radiopharmacy technologist.

6. The exam must be logged into the Radiology Information System (RIS).
   A. If the exam is billable, it must be logged with the standard exam code, appropriate to the study performed.
   B. If the exam is non-billable, the exam must be logged using the miscellaneous exam code.

7. If the written directive is on paper, it will be scanned into the RIS and attached to the study order.

8. A formal report will be dictated by the authorized user on the RIS order.

I fully understand the above policy and I will abide by the requirements of this policy.

Printed Name:_____ Date:_____

Signature:_____

Figure 1. Policy on imaging of staff.

Perform self-assessment

Every member of a radiation safety program must "take title," i.e., accept ownership of the program. They must approach it as if it is theirs and that they are responsible and accountable for all aspects of the program. They must look upon it with the mind-

Radiation Safety Office
Incident Data Form

Submitted by:
Reviewed by:

I. GENERAL INFORMATION

Date of incident:
Time of incident:
Time incident reported to Radiation Safety:
Person reporting incident:
Telephone extension of person reporting incident:
Room/area where incident occurred/Supervisor/Dept:
Radiation Source/Radioisotopes:
Radioisotope Activity:
Radioactive Compound:

II. PERSONNEL INVOLVED IN RESPONSE AND CORRECTIVE ACTIONS

III. DESCRIPTION OF INCIDENT

IV. PERSONNEL PRESENT DURING INCIDENT

V. INSTRUMENTS USED TO SURVEY PERSONNEL

VI. INDIVIDUAL SURVEYS AND DECONTAMINATION RESULTS

VII. RESULTING RADIATION DOSES

VIII. ADDITIONAL PERSONNEL ACTIONS NECESSARY

IX. ROOM/AREA SURVEY

X. INSTRUMENTS USED TO SURVEY ROOMS/AREA

XI. CONTAMINATION FOUND, ACTIONS TAKEN

XII. ADDITIONAL ROOM/AREA CORRECTIVE ACTIONS NECESSARY

XIII. CORRECTIVE ACTIONS NEEDED TO PREVENT RECURRENCE

XIV. TIMELINE FOR CORRECTIVE ACTIONS

XV. DATE CORRECTIVE ACTIONS ARE COMPLETED

XVI. ADDITIONAL COMMENTS

RSO APPROVAL: **DATE:**

Figure 2. Incident response form.

set that "the buck stops with them." If something is wrong or if something goes wrong, everyone in the radiation safety program shares accountability. Each individual in a radiation safety program must repeatedly ask themselves if things are being done correctly, if there are any places in need of improvement, if there are better, safer, or more efficient ways of doing things. A program, no matter how good, should never be allowed to stagnate. Anything and everything can be improved. Anything and everything should be challenged on a routine basis. Because it was done that way in the past is no guarantee that it is the correct or appropriate way for now or in the future.

Radiation safety manuals and policy statements should be reviewed in a manner similar to the manner in which an editor looks at a manuscript. Each statement should be analyzed to determine what it means and if that meaning is clear. Each statement must be understandable to everyone who reads it. If statements are unclear, they should be rewritten to make them clear. If there are any unwritten statements that need to be added, they should be added. The statements made must accurately describe the program and let everyone involved know exactly what is expected of them. The requirements must conform to the regulations or the license conditions.

The sidekick of complacency is an unwillingness to change. Change is a must in any good radiation safety program. Change is necessary in order to move toward the unreachable goal of perfection. Perfection is a moving target that gets elevated every time it is approached. Thinking that perfection has been reached in the radiation safety program and that everything within the house is in order leads to complacency and a deteriorating program.

Respond immediately to incidents

Incidents involving radiation sources or radioactive materials must be responded to immediately by the radiation safety office. Once the situation is evaluated, appropriate steps must be taken to protect employees, members of the public, the facility, and the environment. Once the incident has been brought under control, a thorough evaluation should ensue with documentation, corrective action, and corrective steps to assure such an incident does not recur (Fig. 2 provides a useful form for use in recording incidents). Often the corrective steps will include retraining of personnel and might require modification of policies, procedures, and research or handling protocols. Incidents should be followed with in-service presentations to assure that everyone understands what went wrong and the appropriate steps to take to avoid it happening again. Performance issues must be evaluated and addressed to assure that everyone has a proper attitude toward and an understanding of the rules, procedures, and regulations.

Failure to properly address such issues in a timely fashion can lead to enforcement actions.

When wrongdoing occurs, appropriate and swift disciplinary action must follow. A clear-cut course of disciplinary action must be in place so that everyone understands the ramifications of not following policies and procedures. When disciplinary action is indicated, it should be well documented and administered in a timely fashion. One effective way of meting out disciplinary action is for the Radiation Safety Committee, where appropriate and indicated, to notify wrongdoers, in writing, of the revocation of radiation or radioisotope privileges or the risk of losing such privileges if appropriate corrective action does not follow. Such action should have a time period commensurate with the seriousness of the offense.

Health implications

The radiation doses from a brain scan procedure do not have appreciable potential for health consequences. Nevertheless, when technologists feel that the radiation from such a procedure is the same as received from a chest x ray, this is another indication of a need for additional training. A chest x ray results in an effective dose of less than 0.1 mSv (10 mrem) and an entrance skin exposure that is typically double to quadruple that amount. A brain scan with 740 MBq (20 mCi) of ^{99m}Tc-labeled Ceretec® results in an effective dose of 2.6 mSv (260 mrem) and a dose to the lachrymal glands of 51 mSv (5.1 rem), 38 mSv (3.8 rem) to the gallbladder wall, and 26 mSv (2.6 rem) to the kidneys.

Individuals auditing activities in a nuclear medicine department should quiz technologists on typical radiation doses to their patients from the diagnostic radiopharmaceuticals they administer.

Foster a culture of respect

Licensees must actively foster a culture of respect for NRC (and Agreement State) regulations. Employees must understand that willful disregard for the regulations can jeopardize their privileges to use radioactive materials and can result in both civil and criminal penalties. Institutions that do not succeed in fostering a culture of respect for regulations are responsible for the actions of their employees and can place their institutional radioactive material licenses at risk. An institutional culture of respect for the regulations reduces the likelihood that any individual employee will willfully violate a regulation.

CONCLUSION

A nuclear medicine technologist instructed a student technologist to inject her for a brain scan without the approval from or supervision by an AU. Thus, the licensee is in a position of having committed a violation of the regulations. This violation potentially involves civil penalties and subjects the licensee to public embarrassment and possibly increased scrutiny during future regulatory inspections. Suggestions for avoiding similar violations at other institutions have been presented.

REFERENCES

U.S. Nuclear Regulatory Commission. Rules of general applicability to domestic licensing of byproduct material. 10CFR30.10. "Deliberate misconduct." Washington, DC: U.S. Government Printing Office; 63 Federal Register 1896; 1998.

U.S. Nuclear Regulatory Commission. NRC bars Connecticut nuclear medicine technologist from licensed activities for one year. U.S. King of Prussia, PA: U.S. Nuclear Regulatory Commission; NRC News, I-99-15; 1999.

U.S. Nuclear Regulatory Commission. Order prohibiting involvement in NRC license activities [Inspection Report 030-02078198001(DNS)]. King of Prussia, PA: U.S. Nuclear Regulatory Commission; IA-01-023; 2001.

U.S. Nuclear Regulatory Commission. Unauthorized administration of byproduct material for medical use. Washington, DC: U.S. Nuclear Regulatory Commission; NRC Information Notice 2002-23; 2002.

U.S. Nuclear Regulatory Commission. Notice of Violation (Office of Investigations Report, Nos. 1–2003-046 and 1–2003-046S). King of Prussia, PA: U.S. Nuclear Regulatory Commission; IA-04-023; 2005.

The Story Behind the Story, or There's Lemonade in the Water Cooler Today

Ken Miller, Susan T. Masih, Marcum Martz, and P. Andrew Karam

The following conversations were gleaned from recent postings on the Academic and Medical RSO group (AMRSO) list serve. The opinions expressed in this column should not be interpreted as representing the official policy and/or opinions of the employers of the individual contributors.

It was a beautiful day in your office, but now you have a sick feeling in the pit of your stomach, and you are breaking out in a cold sweat. No, your air conditioning is working fine for a change. You aren't coming down with the flu. What is wrong?

The relatively new radiation worker leaving your office, on the other hand, is feeling much better. She has just dumped in your lap an example of at the very least nonconformance with institutional policy and procedures. She did just what you trained her to do—come to you if she has any questions about the safety or advisability of a procedure using radiation.

You sigh, and reach for your deerstalker cap. It is time for you to polish your detective skills, and investigate . . .

No, indeed, CSI has nothing on the experienced RSO on the trail of a possible problem. We know that an item of self-identified noncompliance—accompanied by a responsible, workable remediation plan—makes Life With Radiation Regulators (and one's own conscience) easier and cheaper than letting the Regulators find the non-compliance themselves. Explaining to administrators that it is less costly to "fess up and fix up" than cover up is also often one of the most difficult tasks an RSO faces.

Of course, that does not make you feel one bit better when you are on the hot seat taking the heat for someone else's mistakes or poor decisions.

But now, as one of our people figured out, you have the Water Cooler Club to help you get through a tight spot and also do a good turn to everyone that might find themselves in similar circumstances.

This is a follow up to Ken Miller's February ORS article. We all thank him for sharing a difficult situation with us and helping us do our jobs better. Thanks, Ken.

The initial posting and the story (in part, in case we forgot)

Dear AMRSO friends:

I need your help in fulfilling an obligation to the NRC.

Some time in the near future, the NRC will place a Notice of Violation in ADAMS, on the NRC "Significant Enforcement Actions" Web site. The Notice is the result of an Office of Investigation (OI) investigation by the NRC that determined that on three separate occasions over the past ten years, technologists in our licensed nuclear medicine program were injected with radiopharmaceuticals without Authorized User knowledge or approval. The most recent instance, the one that precipitated the investigation, was discovered by us and self-reported to the NRC; the other two instances were discovered during the OI investigation and came as a complete surprise to us. When the OI investigation was completed, we were offered a choice to (1) attend a Predecisional Enforcement Conference, or (2) request Alternative Dispute Resolution (ADR) involving us (the licensee); a professional, independent mediator; and representatives of the NRC. We opted for the ADR. In the day-long ADR meeting, an agreement was worked out whereby we (the licensee) would admit to the violations and work with the NRC to inform other licensees that this is not an acceptable practice and that there are additional

The traditional water cooler. Photo courtesy of Marc Martz.

Editor's Note: *The Virtual Water Cooler* is kept filled by AMRSO, a moderated listserve whose membership, by group consent, is restricted for size considerations to RSOs or a designee at medical and academic/research institutions only. Inquiries concerning the listserve may be made to Marc Martz at mmartz@mcw.edu. Suggestions for future discussions at the water cooler can be sent to Marc Martz or Susan Masih (masihs@umkc.edu). Please indicate in your subject line you are suggesting or requesting a discussion topic, otherwise we will delete it unread.

precautions that licensees can and should take to assure that such violations do not happen on their watch . . . *If anyone thinks that such a thing could never happen on their watch, they are wrong.* Please be urged to take whatever steps are appropriate to create a documentation trail that verifies that everyone administering radiopharmaceuticals under your license has received initial and periodic training that emphasizes that radiopharmaceuticals can only be administered under the direction of and supervision by an Authorized User (AU).

Since this incident, we have developed a form that addresses this issue and specifically outlines the requirements that must be followed when nuclear medicine procedures are done on nuclear medicine and radiology staff. Each technologist and student technologist in nuclear medicine must read and sign this form. Furthermore, this topic should be made a part of routine audits performed in Nuclear Medicine programs and audit questions should be phrased in a manner that would increase the probability of getting at the truth (see Michel et al. 2005 for improved methods of asking questions).

Distressed and Disgruntled, RSO

Dear D&D:

You handled this situation very well. You were handed a lemon and you made lemonade. Congratulations.

H. Physicist J.D

Dear D&D:

Interesting story . . . although I'm sure it's one you'd rather not have told . . .. I have to admit, as I was reading the circumstances, I thought for a moment . . . "That wouldn't happen here . . .," but could it?

Here's my own guilty story:

Many years ago, when I was a young, broke, and penny-pinching HP tech at another institution, I think I did something similar. I had injured my foot somehow and suspected I had some broken bones. My insurance featured a $50 co-payment for every urgent care visit, plus however many other co-payments they could stick me for. So I sweet-talked a young lady friend who was an x-ray tech into taking a film of my foot before I decided whether or not I needed to see a doctor. The x-ray looked negative, so I never went in. Bottom line is that I did pretty much the same thing you have just described. In that state, a regulation exists that restricts human use x rays to only those ordered by licensed health care practitioners, as do many other states.

So yes, it can happen!

I also know a former physician who was barred by the AMA for performing an appendectomy . . . on himself . . . but that's another story.

Fessing Up Also

Dear D&D:

I disagree strongly with the requirement for public humiliation in atonement for real or perceived sins. That is exactly what this article seems to be. On the other hand, you are given little or no choice in the matter. I think that your article reads very well, and that it conveys a great deal of information. So, I would say, "Print it as is."

On another note, I think it is interesting that the NRC considers AMRSO to be an appropriate forum for the widespread dissemination of information of this sort. To me, it means that the original purpose of AMRSO has been fulfilled and exceeded. So good for us!

Sincerely,
Mixed Emotions

Dear Mixed Emotions:

I whole-heartedly concur with your opinion. AMRSO has been a good forum, thanks to Andy's vision, for "airing our laundry" . . . by our own volition, however. I hope that NRC doesn't plan to use the list in the future for mandatory public humiliation. The perceived privacy of our members is one of the strong traditions I'd like to keep intact.

Don't get me wrong—I think "Distressed and Disgruntled's" posting was a good thing. I just don't want it to get beyond our control . . .

What do you think?

A Worried Water Cooler Cleaner

Yeah, let's consider control for a minute. We like discussions around water coolers. I can tell you, though, we felt pretty strange when we found out about the couple times the water cooler leaked. We found out once because some of the regulators were using a posting for in-house training. I swear . . . (Flutterbys in the stomach again, don't you know.).

Another Worried Water Cooler Cleaner

Dear Mixed Emotions and Cleaners:

The punishments received (or, more appropriately, the actions we have taken) were as WE suggested. We suggested and NRC concurred that what we saw was probably only the tip of the iceberg and that some way was needed to get the word out that would be effective, rather than just having NRC issue another bulletin. We are educators, so we suggested that we might be able to do a better job of educating than NRC on this issue. We also felt that it was in our best interests to be proactive. When we suggested a posting on AMRSO, the NRC jumped on that idea. It was apparent that they both knew about and appreciated the power of AMRSO. Likewise, *ORS*. We walked away from the negotiations feeling as though we had accomplished some good things.

We really have not had the feeling that we have suffered undue public humiliation. We discovered a problem, we reported it, and we took an active role in helping NRC assure that it doesn't happen again.

Distressed & Disgruntled

Thanks for the clarification. And again—good article!

(Un)Mixed Emotions

Dear Worried Water Cooler Cleaners:

My intent with the posting was not to create or receive public humiliation, it was to alert all RSOs to a potential problem that they might want to examine. I received at least a dozen requests from AMRSO-ers who wanted to share my posting with their nuclear medicine departments or radiation safety committees. Many requested copies of the form we developed. I think the posting accomplished just what we hoped it would accomplish. As for "airing dirty laundry"—if that is going to happen, I would prefer that it be done in a controlled fashion by us rather than by some party over which we have no control. As it turned out, my posting occurred days before the NRC posted the notice of violation on their Web site. By the time they posted, it was already old news.

Regards,
Ken

So, Ken, why do we need more information on this? You did a wonderful job of showing us the procedures used now to resolve a problem!

Lemonade Lucy

Dear Lucy:

The article contains MY thoughts on the subject. The Water Cooler gives others a chance to comment. The personal, off-list replies I received let me know that a fairly large number of individuals shared the posting with their radiation safety committees, their nuclear medicine departments, and the nuclear medicine technology schools. This situation is one that few would have considered without the posting. Overall, feedback was positive and appreciated and accomplished the objective of the posting.

Consider all those strange things that people *could* do that we might never think about:

1. Thou shalt not take radioactive materials to the cafeteria.
2. Thou shalt not spike water coolers with radioactive materials.
3. Thou shalt not offer radioactive materials for sale on eBay.
4. Thou shalt not, etc., etc.

How far should we go in dreaming up all the things that people might or could do—and then provide education that convinces them that they should not do such things?

Ken

Dear Ken:

Oh, I think I understand:

1. No radioactive materials in cafeterias, but it is okay to label lunch boxes with warning stickers, especially if you are a construction worker at a nuclear power plant site. (I never understood that one myself.)
2. No radioactive materials in water coolers, but let's haul out the Revigators again!
3. Anyone have any Fiestaware handy? REAL stuff, not the retro pastels?
4. Nothing? We shalt not do anything? How boring!

I think it is a classic example of Murphy's Law of Emergency Response Planning myself: "If you plan for it, it won't happen. Something else will, but '*it*' won't."

Regards,
Lemonade Lucy

REFERENCE

Michel R, Jacob N, Miller K, Zorn M. Risk-informed, performance-based inspections at medical facilities. Health Phys 88(suppl 2):S69–S72; 2005.