FACILITY SAFETY & NEWS

Volume 3 TA-55 Nuclear Materials Technology Bulletin May 1993

Laboratory Scientists Form Team To Solve the Problem of Lead-lined Glovebox Gloves

When Dave Olivas came to TA-55 from Rocky Flats three years ago to become the Weapons Fabrication Technology section leader in NMT-5, he had no idea he would be involved in research to develop new glovebox gloves. But last May when the EPA decreed work must stop if it generates mixed waste, Dave couldn't get his work done, and "necessity became the mother of invention." Dave and others at the Laboratory began to take steps to meet the challenge.

Dave Olivas and a lead-lined glovebox glove

Identifying possible mixed waste streams at TA-55. The first step was to identify all possible waste streams at TA-55 that might generate mixed waste. One of the largest of these was leaded glovebox gloves, which resulted in about 5,000 pounds of mixed waste per year from LANL alone. Gloves must be replaced when they wear out, and they are mixed waste because of an inner layer containing lead particles. This layer is used to reduce radiation exposure to workers.

Researching the problem. Perhaps someone else was already working on (or had solved!) this problem. Dave Olivas and Clete Land made many calls. They started with the glove manufacturer. The company didn't know of anyone working on the problem, but it was certainly interested in the problem since glove sales had dropped dramatically. Next they made 30 or 40 contacts throughout the DOE Complex and to the Washington Program Offices. Nobody was doing anything, but everyone knew the gloves were a problem. Everyone wanted to reduce mixed waste, but no one was willing to pay for research.

Deciding how to approach the problem. Dave had no time, no money, and a real need. Shutting everything down was the **wrong answer.** Three questions had to be answered.

Do we really have a problem? It is lead that makes the gloves mixed waste, but since the lead is sealed in an inner layer of the glove, does it leach out? By coincidence, Bob Villarreal, a section leader at CLS-1, the Analytical Chemistry Group, had also called the glove manufacturer on the glove issue. The company put him in touch with Dave. Bob and John Phillips, the Group Leader of CLS-1, took an interest in the project and conducted a Toxicity Characteristic Leaching Process (TCLP) analysis on an unused glove. The lead did not leach out, or at least any leaching was below the federal limit — the unused gloves passed the test!

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Recognition for a Job Well Done

You will soon see coworkers wearing NMT Quality pins like the one shown here. How do you get one?

Dana Christensen, Deputy Division Leader, presents them as a thank you when he sees or hears of someone doing something special to improve the overall quality of our operations at TA-55. If you think someone deserves one, let Dana know. He is looking for individuals from all aspects of TA-55 operations who approach their jobs with an eye toward improving quality. Innovative ideas or special efforts to improve TA-55 in any way will be recognized.

In this Issue:

The Facility Safety and News Bulletin provides safety information and facility news to TA-55 employees. It also seeks to recognize workers who contribute to the continuous safe operation of the facility.

Los Alamos
NATIONAL LABORATORY
Los Alamos, New Mexico 87545

Safety Award Winners

February

Stuart Apgar

Stuart Apgar, NMT-3, won the first place safety award in February. He discovered a high oxygen content in the house-supplied argon lines that could have created an unsafe condition in certain glove boxes. He suggested installing an oxygen sensor in the argon manifold line so the Operations Center can detect the presence of oxygen.

Second place was awarded to **Russ Calhoun, HS-1,** for reporting a roof leak that resulted in water dripping on the CAM in the south stack of PF-4. He suggested fabricating a cover plate for the top of the CAM to protect it from any future water damage.

Third place was awarded to **Jane Gladson, NMT-1.** She pointed out the lack of chemical spill kits in the vicinity of the chemical storage units (PF-190) located on the north side of the warehouse. She suggested that if kits were located near these units, any spills would be easier to contain and minimize.

March

Dave Olivas

First place in March was awarded **to Dave Olivas, NMT-5.** Dave was concerned about the labeling of items stored in the vault. Inadequate labels on long-term storage items can lead to unpleasant surprises when the items are retrieved from the vault and unpacked for use. He suggested that an information label be attached to the exterior of all items sent to the vault. This label would clearly show individuals what to expect when unpacking an item.

Second place was awarded to **Eli Vigil, NMT-1.** Eli expressed a concern about a burned-out red warning light located over the laboratory doors in PF-4. He suggested replacing the lights on a regular schedule or installing an audible alarm that would activate when the light burns out.

Third place was awarded to **Brad Smith, NMT-3.** Brad suggested that all safety inspection team members be required to wear full anti-C clothing and gloves when performing inspections in PF-4. They would then be allowed to touch and inspect items in PF-4 without the risk of becoming contaminated.♦

Glovebox Gloves

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Perhaps there was no problem. But then the same analysis was tried with used gloves. Some failed, some did not. The older the glove and the rougher its use, the more likely it would fail.

How do we go about taking on this project? A small amount of funding was arranged through NMT-DO and EM-DO to pay for preliminary research on the problem.

Who should be involved? It was important to have a full spectrum of interests and expertise represented on the project. Those who are or will be involved include

NMT-5:	Dave Olivas and Clete Land - users
CLS-1:	Bob Villarreal and John Phillips - radiation attenuation
MST-6:	Billy Baker - plastics
HS -1:	Julio Castro and Roger Huchton - safety aspect
NMT-2:	Mike West - user and TA-55 waste packaging
EM-8:	to interface with EPA
EM-7:	to eventually dispose of waste

Writing a Proposal. Robert Villarreal, John Phillips, David Olivas, Billy Baker, and Roger Huchton wrote a white paper on "Replacement of Pb-Lined Glovebox Gloves with Nonhazardous Alternative."

Getting the cooperation of the glove manufacturer. Dave went to the only company in the U.S. making leaded gloves, and talked to the director of research. LANL had something concrete it wanted to try at that point. The company agreed to make experimental glove materials. Lead-free gloves would reduce the company's costs for disposing of hazardous waste.

Trying new glove material. The company sent samples of the new glove material. Bob Villarreal and Nelson Stalnaker of CLS-1 conducted tests, and the results looked good. The materials worked, but they need fine tuning for manufacturing problems, such as getting the material to stick to the rubber and enhancing wear properties.

Applying for a patent. The Laboratory has applied for a patent on the concept of a new type of lead-free glove. Villarreal, Phillips, Stalnaker, and Olivas are listed as inventors.

Making prototype gloves. The next step will be for the glove manufacturer to make prototype gloves with the new material.

Testing the new gloves. The new gloves will then be tested in service at LANL.

Presenting the solution to EPA. If the new gloves work, Dave has asked EM to present the solution to EPA. Not only would this allow the Laboratory to take credit for doing something about the problem, we would get a definite ruling from EPA on the new gloves before the manufacturer and Laboratory make large investments. Concurrently, a comprehensive literature search is underway to determine toxicity of the replacement materials.

Dave is impressed that in less than a year the team has been able to get these results with minimal support. He is also encouraged by the cross-divisional cooperation. Even though it wasn't really Dave's job to solve this problem, the problem impacted his work, so he tackled it anyway.♦

What Happened In TA-55 Personnel Contaminations?

by Bill Parras, NMT-8

Background on Occurrence Reporting Stages

As was indicated in the March issue of the TA-55 Facility Safety and News Bulletin, investigation of TA-55 occurrences is an ongoing process. Three standard reporting stages are required by DOE Order 5000.3B.

Notification Report. A notification report identifies preliminary information on what happened and what immediate actions were taken to stabilize the impact of the adverse event.

10-Day Report. The 10-day report gives more details on the result of the investigation and may venture to identify the potential causes of the event.

Final Report. The final report completes the official investigation. It identifies all causes, corrective actions, and lessons learned. It also includes comments from Facility management and local DOE site representatives. It is important to keep in mind that all information on why a TA-55 event occurred and what corrective actions will be taken is officially determined only in the **final** occurrence report.

If an event has significant safety implications, HS Division may require a special (Class C) investigation as specified under DOE Order 5484.1. The investigation is done by a team of experts. The final report must include the findings and recommendations of a Class C investigation.

Status of Recent TA-55 Occurrences

From the beginning of this calendar year through April 8, 1993, a total of ten occurrences have been reported by TA-55 organizations. Four were personnel contaminations, five were for alarms sounding, and one was an area contamination.

TA-55 has filed notification reports for all ten occurrences. Five events have had 10-day reports issued, three events have final reports under review, and two events are pending the outcome of a single Class C investigation. Since the investigation is not complete, we will only be telling what happened in the four Personnel Contamination occurrences in this issue. However, we will provide the causes and lessons learned from these occurrences and information on all other occurrences in future bulletins.

Overview of TA-55 Personnel Contamination Occurrences

The following is an overview of the four Personnel Contamination occurrences at TA-55. You can get more detailed information in the official TA-55 occurrence report. You can find these reports in your TA-55 group office or at the NMT-8 Occurrence Reporting Office in PF-1.

January 19, 1993 - Nitrate system personnel were attempting to clear reaction debris from the argon supply line by flowing argon gas through the line into an open chamber of a glove box in Room 429. The room Continuous Air Monitoring (CAM) alarms were set off and all eight people in the room were evacuated, surveyed for skin contamination, and tested for inhalation of plutonium. While no skin contaminations were detected, two individuals were determined to have positive counts on nose swipes. HS Division has required a Class C investigation of this incident and the results are pending.

February 1, 1993 - After performing a standard plutonium operation, a glove box worker in Room 409 was found to have skin contamination on the forehead and left calf of leg. The worker was immediately decontaminated and tests indicated no significant uptake. The worker was wearing appropriate protective clothing and surgeon gloves. Contamination was originally found by self-monitoring. The source of the contamination seems to be two glove box gloves that were found to have pin hole leaks. Actual causal factors for this contamination are still under investigation by NMT-2.

February 2, 1993 - During an unpacking operation conducted in an open front hood in Room 329, an oxidation reaction occurred as an operator was lifting an inner plastic bag from an outer lead-lined container. The plastic bag contained transuranic metal that had been stored for approximately 10 years. The operator was immediately determined to have contaminated both left and right arm as well as the neck.

Lessons Learned - All group and NMT Division organizations having similar operations were notified regarding the specifics of this occurrence. An important lesson learned in this incident was that containers with long-term transuranic metal should not be opened in open front hoods. The TA-55 packaging procedure (515-GEN) was changed to: (1) better define the hazards associated with unpacking Special Nuclear Material and (2) avoid contamination hazards to operators. All appropriate TA-55 facility personnel will be retrained and recertified on these changes to TA-55 packaging procedure. In addition, TA-55 vault personnel will conduct an inventory to locate long-term storage containers that need to be repackaged according to this new procedure.

February 18, 1993 - A glove box operator was hand grinding a transuranic metal sample on a grinder inside a glove box. On exiting Room 115, the operator was discovered to be contaminated on back of head, face, and palm of right hand. The probable source of the contamination is a suspected hole in the right hand glovebox glove. The causes of this incident are pending final investigation by NMT-1.♦

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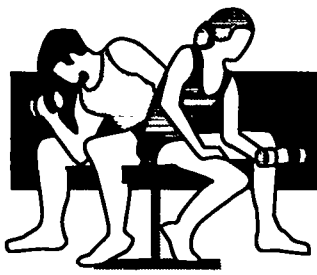


Being Flexible about Fitness

June is Fitness Month—a good time to begin a personal exercise regime if you don't already have one.

The benefits. How does exercise benefit employees at work? *Today's Supervisor* asked its readers, and they said

- It helps employees cope with stress.
- It strengthens the muscles and reduces sprains,strains, and back injuries.
- It builds self-confidence and self-esteem.
- It cuts down on sickness and lost days.
- It keeps employees more mentally alert and energetic.
- It helps employees with specific health problems like high blood pressure and weight control.

The pitfalls. On the negative side, employees can and do injure themselves while exercising. Those who

- exercise excessively,
- don't know the correct way to do a chosen exercise, or
- ignore warnings from their doctors or their bodies,

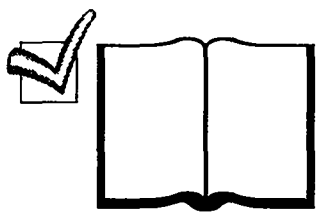
may be doing themselves more harm than good.

Dr. Judith Rodin in the book *Body Traps* warns against taking the quest for fitness too far. Her advice is captured in two words: **moderation** and **consistency**.

Moderation. People stay with moderate exercise programs longer and more willingly than a regimen of intense grueling workouts. Sudden bursts of intense exercise are not beneficial and are likely to cause injury.

Consistency. Consistency is the key to a good exercise program. Focusing on consistency raises a whole new set of questions about what kind of exercise to do, such as "How much do I enjoy this type of exercise?" and "How hard is it for me to do this exercise regularly?"

Safety Tip



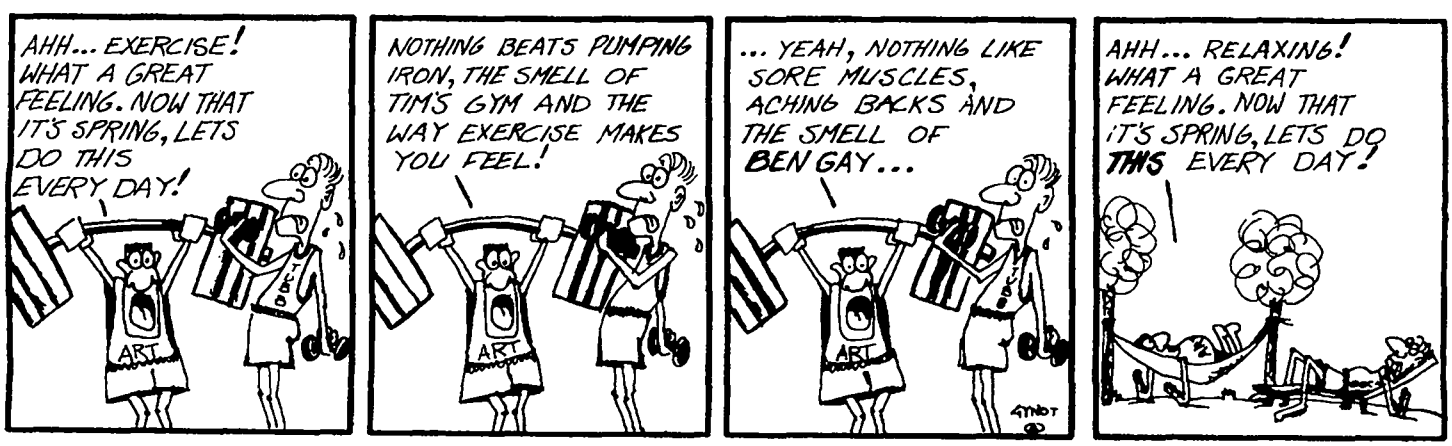
If you have a safety manual with a blue cover, it's out of date. Take it to the Training Center in PF-39 and exchange it for a new manual with a green cover.

Decide what type and amount of exercise you will do. Then stick with your program.

TA-55 Exercise Room. TA-55 has a satellite exercise and weight room in PF-6. The sign on the door says, "Tim's Gym" because Tim Gallegos, NMT-2, helped get the gym started and serves as the primary contact for training and safety. A committee is being formed to promote a broader facility involvement. The gym has a treadmill, stair masters, exercise bikes, weights, and resistance equipment. The rules for using the room are clearly posted on the wall. The most important ones from a safety perspective are

- never work out in the room alone,
- always use a spotter when lifting heavy weights,
- put weights back after using them so others won't trip over them, and
- contact Tim Gallegos (7-2572) or another qualified trainer if you are a beginner.♦

Tim Gallegos (left) acts as a spotter for Joe Roybal (right) as he lifts weights in the TA-55 exercise room.



The ALARA Committee at TA-55

by Carl Hoth,
Committee Chair

ALARA Committee Members
left to right: Tom Blum, Carl Hoth, Gerald Schreiber, Harold Archuleta, Jean Dawson, Al Nichol, Liz Foltyn, Phil Scofield, Laura Jarvinen, Nancy Scheer, Mark Martinez, Bill Inkret
not pictured: K. Hench, C. Land, D. Thompson, J. Quintana, J. Whicker, L. Walker

History.

A committee was established in 1985 to address radiation control issues at TA-55. The "Radcon Team" was co-chaired by Lee McAtee and Carl Ostenak and included TA-55 group representatives. In 1991, the group was renamed the "ALARA" committee to reflect the "as low as reasonably achievable" philosophy for radiation protection. Also in 1991, the objectives of the committee were expanded. They now include maintaining personnel radiation exposures and exposure to radioactive contamination as low as reasonably achievable.

Activities.

The ALARA committee

- tracks personnel exposure data to ensure that individuals do not exceed exposure limits and
- reviews high exposure operations to find possible ways to reduce exposure.

The committee reports to TA-55 management. The ALARA committee members are the group contacts for requesting information or providing suggestions on radiation exposure and contamination control issues.

One of the challenging areas for the ALARA group is keeping up with the changing regulations and reporting requirements. Last year the DOE and the Laboratory each issued a new *Radiation Control Manual*. The TA-55 ALARA committee reviewed and commented on these documents prior to release.

Maximum Exposure Goals.

The ALARA committee recommends a maximum radiation exposure goal for personnel. Different goals are established for each group, depending on past exposures and on upcoming operations. The goals for individuals in each group in 1992 and 1993 and the actual maximum exposure in 1992 are provided in the table below.

TA-55 Maximum Personnel Exposure by Group
(Whole body exposure in rems)

Group	'92 Goal	'92 Actual	'93 Goal
NMT-1	0.25	0.136	0.25
NMT-2	1.5	0.735	1.5
NMT-3	1.7	0.893	1.5
NMT-4	2.0	1.660	1.75
NMT-5	1.75	1.134	1.75
NMT-6	1.5	0.497	1.0
NMT-8	0.5	0.366	0.45
NMT-9	2.0	0.789	2.0
CLS-1	0.5	0.062	0.25
HS-1	1.5	0.836	0.5
JCI	2.0	0.432	0.5

Questions about PSAP

by Rita Bieri,
PSAP administrator for TA-55

Q: What happens if a PSAP employee has a positive drug test?

A: If an employee's urine sample is positive for drugs, the Medical Review Officer (MRO) at HS-2 immediately places the employee on Health Check (if a LANL employee) or sick leave (if JCI or PTLA) until the MRO is able to review the drug test with the employee.

If the MRO confirms a positive drug test, he immediately informs the Laboratory PSAP Administrator who in turn notifies the employee's manager. The employee is removed from PSAP. The MRO refers the case to HS-2. The employee may be offered rehabilitation by the employee's management and HS-2, and may be subject to disciplinary action.

If the employee accepts and successfully completes rehabilitation and returns to work, the employee must return through HS-2. The employee will be placed on a random testing schedule as determined by the Director of Occupational Medicine.

The employee cannot return to the PSAP position. PS-1 will work with the organization to place the employee in a non-PSAP position. The employee now qualifies as an employee with a disability. However, if the employee tests positive after returning to work, the employee is no longer protected as a disabled employee and must be terminated.

If you have a question about PSAP, call Rita Bieri, the TA-55 PSAP administrator, or Paula Dransfield, the Laboratory PSAP administrator. Questions can also be placed in Del Harbur's box in the main entrance of PF-1.

News From Division Office

by Del Harbur

DOE Mentors Begin Work With TA-55 Managers to Improve Operations

Mentor Program Begins

TA-55 has been selected as the first Laboratory facility to host mentors from the DOE. The program began April 12 and will involve approximately 14 mentors over a period of at least six months. The program is being initiated at TA-55 because of our recognized importance to the future mission of DOE. While the initial focus is on TA-55, what is learned here will be transferred to other LANL organizations and facilities.

What is the Mentor Program?

The mentor program is a cooperative effort between DOE and LANL. It places DOE representatives inside facilities to work with management to

- improve facility management and operation and
- implement Conduct of Operations.

The mentor team provides direct feedback to LANL with comments and recommendations. The mentors will concentrate on problem solution rather than problem identification; their role is intended to be nonadversarial. They are here to provide assistance rather than their usual oversight role. The mentors do not dictate solutions to us, but we consider the team's recommendations and proposed solutions in view of the overall operation. Each mentor is assigned to work with a specific individual at TA-55.

Who are the Mentors?

The mentors are a group of experts from management, administration, operations, maintenance, training, and safety. Some are DOE staff and some are consultants. They have extensive experience implementing programs similar to those at Los Alamos.

What are the Goals?

The short-term goal is for the team to become familiar with TA-55 and to review the management systems. The long-term goal is to help management at LANL and TA-55 implement DOE requirements.

The Laboratory has recently undergone major assessments, including the Tiger Team assessment. We have been working to develop and implement corrective action plans to address deficiencies pointed out by these assessments. At the same time we are attempting to meet new DOE initiates such as Conduct of Operations and Maintenance Management Programs. We welcome direct assistance from the DOE mentor team in helping us meet these requirements and improve our operations.♦

Are You Scheduled to Have a Medical Isotope Injection?

by Mark Schanfein, OS-2

TA-55 is one of three places at the Laboratory where Security Inspectors monitor people and vehicles for SNM. This is done to ensure that these materials are properly safeguarded. ***The monitors are so sensitive that Laboratory employees who receive medical isotope injections from their physicians will test positive for nuclear materials.*** These individuals are then detained until the cause of the alarm is resolved.

Planning ahead. If you are planning to have a radioisotope injection, some advanced planning will prevent delays when you're ready to come back to work.

At least one week before you plan to have the injection, your supervisor needs to send a memo to OS-10. Copies go to OS-2 and HS-2.

The memo should detail

- the specific radioisotope,
- the date it was or will be received,
- areas where access is required, and
- the reason why access is required.

Returning to work. Once OS gets the memo, they will inform the Security Inspectors that you are approved for entry. However, OS-2 has to measure you for special isotopes each time you enter or exit TA-55. This is why you need to coordinate your return to work with OS-2.

If you have any questions or want more information, call Jose Gutierrez, OS-2, 7-5886.

Some common isotopes and their typical time limit for portal detectability are

- iodine (I^{131}) - 8 weeks,
- technetium (Tc^{99m}) - 1 week,
- thallium (Tl^{201}) - 5 weeks, and
- gallium (Ga^{67}) - 6 weeks.♦

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