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CONF-870467--2

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LA-UR--86-4327

DE87 003750

TITLE DEVELOPMENT OF THE LOS ALAMOS NATIONAL LABORATORY PLUTONIUM FACILITY DECONTAMINATION ROOM

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SUBMITTED TO 9th Annual International Association of Quality Circles Conference, New Orleans, LA, April 6-9, 1987

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Development of the Los Alamos National Laboratory Plutonium Facility Decontamination Room

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For several years the Health Protection Group attempted to remedy the problem of a facility to adequately handle personnel plutonium contamination incidents. Through the efforts of our Quality Circle a presentation was made to management, which immediately appropriated space and funds for the construction of a complete decontamination facility.

QC INTRODUCTION

The Sempar Securitas Quality Circle is a support work force at Los Alamos National Laboratory's Plutonium Processing Facility. We are members of the Health, Safety, and Environment Division of the Laboratory. As the Chemistry Health Protection Group, we provide radiation safety support surveillance, and expertise for the various research and development processes in the Plutonium Facility. In June of 1985, at the request of management, the Quality Circle was established to involve the health protection technical supervisors and technicians in the problem solving and decision making process of our group.

DEFINE THE PROBLEM

In 1975 when the Plutonium Facility was designed a specialized decontamination room was planned; however, this space was needed by operating groups. Personnel decontamination instead has been done by using existing janitorial sinks and emergency showers. While this situation was satisfactory for minor contamination incidents, it was inadequate for large scale problems involving multiple personnel. Further, the situation worsened between initial operations in the facility in 1978 and the early 1980's due to a large increase in the number of facility operations personnel. Since the building was completed in 1978, several attempts were made without success by supervisory personnel to provide an adequate decontamination room. We saw this problem as a high priority and took on the task of designing a complete and modern personnel decontamination room.

BRAINSTORMED FOR IDEAS

The brainstorming method was used to determine the strategy necessary to solve the immediate problem. The most important consideration was the location of the proposed decontamination room and acquisition of the space. We also brainstormed to compile a list of equipment and fixtures we thought would be appropriate for a decontamination room suitable for several men and women. The sessions enabled us to come up with various alternatives to acquire the needed space and also some ingenious ideas for improving the methods for decontaminating various personnel. One example was the need for an appropriate method of decontaminating a worker's hair. This entails washing the person's hair possibly up to five times. During the brainstorming session one of the circle members suggested a beautician's sink. We had been using a janitor's sink where the individual was in a position to lean forward into the sink. This position, besides being uncomfortable for the individual, was possible a safety hazard due to two factors: 1) the person may hit his or her head on the faucet which protruded approximately six inches, and 2) the contamination which was being washed off the hair could flow down into the worker's eyes, nose, or mouth.

With the list of fixtures and equipment we designed a physical layout for the two rooms. We felt that two rooms were necessary due to past occurrences involving both women and men being contaminated at the same time.

BARGAINING FOR SPACE

Several Quality Circle members took on the task of drawing possible floor plans which incorporated the list of fixtures and equipment. There were six floor plans drawn up and two were rejected immediately through the multi-voting process. These two floor plans were in an upstairs mezzanine and the basement area. They were rejected because both areas were too far from the main floor and processing areas which would necessitate transport of contaminated personnel and thereby increasing the potential for spread of contamination. Another area was rejected since total usable floor space was less than 200 square feet which was below our previously established minimum of 350 square feet. Of the remaining three areas being considered, two more suggestions were discarded. One because there were already plans for its use and the other because the space was already being used by the electronics group which has a high priority at our site.

From six floor plans submitted we decided on one particular floor plan which utilized the existing janitor's closet plus approximately 200 square feet of adjoining space for expansion. It became obvious that this area would be ideal since it was on the opposite wall of the existing decontamination area. It was necessary to convince the operating group using this area that they would not be losing any usable floor space but, in reality, would be gaining wall cabinet space and some floor space. At this point we informed the users of the space that we would be submitting a request to management for a new decontamination room expansion. We informed them that we would like to trade their space next to the janitor's closet for space which our group used as a storage area. We had carefully considered the idea of giving up our storage space and felt that it would be beneficial if we could expand the proposed decontamination room. Most of the miscellaneous storage could be moved to another area and our instrument storage to a small airlock nearby.

Many discussions took place between our Quality Circle, the operating group, and management over the matter of space requirements. The feasibility of trading the electronic area for our area next to it, which was being used for instrument storage, was pointed out. The main concern of the user group was that they be given more space than we were willing to trade. They felt they had been deprived of space previously. An agreement was finally reached after two weeks of negotiations.

FEASIBILITY STUDY/LIST OF PRICES AND SOURCES OF EQUIPMENT

The Quality Circle decided to try to anticipate as many questions as possible which may be asked during the management presentation and to have all the answers ready. These would be incorporated into sub-topics of the future management presentation. We did all the leg work for researching costs and suppliers of equipment and fixtures. A detailed list was prepared which included each item, fixture and equipment cost, and the supplier. We interfaced with the Laboratory's Engineering Department and asked them to do a feasibility study of our plan. The feasibility study included a breakdown of projected labor and construction costs. The engineer's feasibility/cost study revealed that our project would cost approximately forty thousand dollars.

RESEARCH AND DOCUMENTATION

The members of the Quality Circle felt that group records would need to be reviewed, pertinent data extracted, and presented in a meaningful way.

Though brainstorming it was decided that the data necessary for our presentation included census figures for the last seven years 1979 to 1985, numbers of personnel needing decontamination for the three year period 1983 to 1985, and records of past incidences documenting the inadequacy of the present facility and the need for a new one.

A Hewlett Packard 250 computer and plotter were used to produce bar and line graphs of census and decontamination data used in our management presentation. Transparencies of the graphs were used as visual aids and hard copies were included in the presentation pamphlet which was distributed to all managers present.

From group records, a memo written by a former supervisor was obtained of an incident in 1983. This memo detailed the inadequacy of the facility, the need for a remodeled area, suggestions for fixtures and equipment, and the design of a new decontamination room.

MANAGEMENT PRESENTATION & RESPONSE

At the time of the management presentation the Quality Circle had nine members. We decided that each member should take a sub-topic and prepare his or her part for the presentation. The sub-topics for the presentation were: the introduction, the old floor plan/crowded space, research of site population and past occurrences, bargaining for adjoining space, new floor plan, feasibility study/list of supplies, discussion of past contamination occurrences, statement of need, and the letter written in 1983 documenting the need for possible new design.

In preparation for the management presentation, members of the Quality Circle made several visual aids which helped make a more convincing argument. Slides of the present decontamination room were taken which showed the crowded conditions and inadequate equipment and fixtures. We prepared several graphs which were presented in viewgraph form to enable us to discuss the proposed changes during the management presentation. The list of supplies and equipment and the feasibility study were also put into viewgraph form.

The Circle decided in a meeting that the presentation would be limited to 30 minutes with additional time for questions. Two rehearsals of the presentation were performed to allow us to feel

comfortable with our individual parts and to get our timing right since we wanted the whole presentation to flow between nine speakers. At the suggestion of our facilitator, the management presentation was videotaped by the Laboratory's Training Office for use in training other Quality Circles in the skills of an effective presentation. Immediately after the last speaker we were congratulated on the professional work he had done in researching and design of the new decontamination rooms. The facility manager also made the statement that the forty thousand in funds would be found to make the changes.

FOLLOW-UP PURCHASING AND CONSTRUCTION

Shortly after the managers approved our plan we were asked to complete the purchase orders necessary to acquire all the fixtures and equipment for the new rooms. This entailed many hours of paperwork and interfacing with the Laboratory's purchasing group.

It was several months before construction actually began on the rooms. There have been many questions during construction which we have had to answer and occasionally an interpretation of design requirements or a minor change in the floor plan was required. This necessitated an almost daily contact between the Quality Circle members, the Facility Engineer, and the Craftsmen doing the construction.

At the present time construction is complete and we soon plan to dedicate the new facility to the former supervisor, now deceased, who in 1983 wrote a letter to management outlining the need, fixtures, and equipment necessary for a modern decontamination room.

REFERENCES

Connelley, Barbara, is an Administrative Staff Member with the Facility Management Group at the Los Alamos National Laboratory's Plutonium Facility. She served as the Facilitator for the Sempor Securitas Quality Circle.

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