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Westinghouse Hanford Company Health and Safety Performance Report

First Quarter Calendar Year 1996

Safety
Radiological Control

Date Published
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Assistant Secretary for Environment,
Safety and Health

Westinghouse Hanford Company
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ACKNOWLEDGEMENTS

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MANAGEMENT SUMMARY

Topping the list of WHC Safety recognition during this reporting period is a commendation received from the National Safety Council (NSC). The NSC bestowed their Award of Honor upon WHC for significant reduction of incidence rates during CY 1995. The award is based upon a reduction of 48% or greater in cases involving days away from work, a 30% or greater reduction in the number of days away, and a 15% or greater reduction in the total number of occupational injuries and illnesses. (page 2-1).

A DOE-HQ review team representing the Office of Environment, Safety and Health (EH), visited the Hanford Site during several weeks of the quarter. The 40-member Safety Management Evaluation Team (SMET) assessed WHC in the areas of management responsibility, comprehensive requirements, and competence commensurate with responsibility. As part of their new approach to oversight, they focused on the existence of management systems and programs (comparable approach to VPP). Plant/project areas selected for review within WHC were PFP, B Plant/WESF, Tank Farms, and K-Basins (page 2-2).

Effective safety meetings, prejob safety meetings, etc., are a cornerstone of any successful safety program. In an effort to improve the reporting of safety meetings, the Safety/Security Meeting Report form was revised. It now provides a mechanism for recording and tracking safety issues (page 2-4).

WHC has experienced an increase in the occupational injury and illness incidence rates during the first quarter of CY 1996. Trends show this increase can be partially attributed to inattention to workplace activities due to the uncertainty Hanford employees currently face with recent reduction of force, reorganization, and reengineering efforts (page 2-7).

The cumulative CY 1995 lost/restricted workday case incidence rate for the first quarter of CY 1996 (1.28) is 25% below the DOE CY 1991-93 average (1.70). However, the incidence rate increased 24% from the CY 1995 rate of 1.03 (page 2-8).

The reengineering of the Radiological Control organization has resulted in an increase in the availability of personnel to help facilities with the procurement and use of practical ALARA measures. In addition, there seems to be more awareness of the need to use ALARA, resulting in a significant increase in the number of calls received by the ALARA Program Office for help in solving radiological problems (page 1-3).

MANAGEMENT SUMMARY (Continued)

The Figure 3-2-1 chart data includes WHC, BCSR, and ICF KH employee exposure. The first quarter CY 1996 results represent the exposure of 1,913 quarterly-badged employees and an average of 846 monthly-badged employees.

There were three instances of potential loss of contamination control during the calendar quarter involving three workers where internal dosimetry follow-up was performed. No intakes of contamination were detected (page 3-6).

There were five skin contaminations and 18 clothing contaminations reported during this quarter in all WHC-managed facilities/areas. This represents an improvement in performance compared to the first quarter of CY 1995 (page 3-9).

A monthly average of 76 Radiological Problem Reports (RPR) was issued during the first quarter of CY 1996 for a total issuance of 227 RPRs. The monthly average for the same quarter in CY 1995 was 76; a total of 228 for the quarter (Figure 3-5-1).

At the end of March, WHC Dosimetry was monitoring the following employees/sub-contractors: 631 monthly standard dosimeters, 251 monthly combination dosimeters, 1,386 quarterly standard dosimeters, 472 quarterly combination dosimeters, and 3,716 annual dosimeters. During this period, Dosimetry had 987 requests for changes to the frequency, and terminated 731 dosimetry records.

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ALARA

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1.0 ALARA

The basic ALARA objective is to ensure that radiation exposures to workers, the public, and the environment are kept to the lowest levels practicable commensurate with sound economics and operating practices. Current thinking is that any radiation exposure, no matter the amount, may carry with it some degree of detriment or risk. Although the level of risk associated with radiation exposure limits is very small, it is prudent to keep exposure and risk, as low as reasonably achievable and to assure that this risk is assumed only if a comparable benefit is achieved. In other words, it is always appropriate to seek cost effective methods to reduce exposure or to do more work with less dose received.

The ALARA concept is an integral part of the radiation protection effort, not a separate entity. While certain activities may be identified and conducted under the ALARA banner, these same activities should be part of a normal, comprehensive health physics program. It is extremely difficult to have either a strong health physics program without a strong ALARA program and vice versa.

It should be clarified that ALARA is not a dose limit, but a process with the objective of attaining and maintaining exposures as far below the applicable limits as is reasonably achievable. The purpose of this section is to address how this process is being accomplished within the Westinghouse Hanford Company (WHC) ALARA/Contamination Control Improvement Project (CCIP) Program.

Management's perspective of radiological work activities has a great influence on the degree of radiation exposure accumulated in the workplace. History has shown that effective dose reduction needs firm management involvement and support. The ALARA principle, applied through all levels of management and workforce, and in all important works, is a useful tool in this respect.

The focus of the ALARA Section of this publication covers the ALARA Program achievements during the first quarter of calendar year (CY) 1996 -- information on the CCIP is also contained in this section.

1.1 WHC PROGRAM CHANGES

As part of reengineering, the central Radiological Control organization, which includes the WHC ALARA Program Office, underwent some changes in its structure. The WHC ALARA Program Coordinator was moved into the central support group of the Radiological Control, Center of Expertise (COE) and reports to the Central Support Group manager. This provides the COE with a direct link to the site ALARA program. The ALARA Coordinator's duties have been expanded to include the coordination and management of the Contamination Control Improvement Project database.

Furthermore, in an effort to provide facilities with additional radiological engineering field support, a second health physics analyst was added to the staff. Both of the health physics analysts supporting the ALARA Program now report to the manager of Radiological Engineering.

1.2 WHC ALARA GOALS

Site-wide and facility-specific ALARA goals for CY 1996 were planned concurrent with the budget planning process. By planning the goals during this time frame, management has a better opportunity to designate funding for the completion of cost-related ALARA projects and protective measures, as necessary.

It should be realized that, with the reengineering of Hanford, which included budget cuts, reduction of physical resources, and reprioritization of some projects, some of the ALARA goals that were forecast for completion during CY 1996 may be postponed or canceled.

1.2.1 Sitewide ALARA Performance Goals

A synopsis of the progress towards completing the CY 1996 WHC sitewide ALARA goals is contained in Appendix A of this report. Through the first quarter of CY 1996, the ALARA Program Office is on track to complete all of the sitewide ALARA goals.

1.2.2 Facility/Organization ALARA Goal Performance

Progress on the implementation of the facility/organization ALARA program at WHC is evidenced in part by the development and achievement of ALARA performance goals by the facility/organization ALARA committees. The CY 1996 facility-specific goals were established to effectively implement exposure reduction activities, provide an incentive to implement ALARA, and as a method to measure achievements and management's commitment to ALARA programs. However, the ALARA goals are not the only means utilized to measure the effectiveness of the facilities ALARA program. A synopsis of some of the field implementation of ALARA principles and radiological engineered devices can be found in Section 1.3 of this report.

1.3 ALARA/CCIP PROGRAM IMPLEMENTATION, PROGRESS, AND ACHIEVEMENTS

The WHC ALARA Program Office believes it is important to promote the contributions and accomplishments of the ALARA Program by communicating its progress and achievements. The following is a partial list of the activities and projects where documented ALARA successes have occurred during the first quarter of CY 1996 are provided.

The reengineering of the Radiological Control organization has resulted in an increase in the availability of personnel to help facilities with the procurement and use of practical ALARA measures. In addition, there seems to be more awareness of the need to use ALARA, resulting in a significant increase in the number of calls received by the ALARA Program Office for help in solving radiological problems. The following items describe some of the ongoing projects that are related to ALARA.

- A trip report was submitted concerning the ALARA Program Office staff's visit to the Savannah River Site (SRS) to look at containments and ALARA practices. The report discusses the SRS containment program, glove bag training, waste minimization, Radiological Worker III training, waste disposal and information exchange.

- The ALARA Program Office issued a preliminary report on an innovative method for cutting radioactive piping. This report discusses the use of spray foam insulation to seal a pipe prior to

using power tools to cut out the pipe, with no spread of contamination. This method works and we are currently looking for a substitute material that is non-hazardous in its final dry form.

- Milestones RAD-96-002/003, to conduct quarterly interface meetings with representatives from RL, were both completed on or ahead of schedule. These reviews included statusing of: the ALARA site-wide and facility and organization-specific ALARA goals, radiological/contaminated area reduction, discussing RL's expectations of the WHC ALARA program, and the implementation of practical ALARA applications. Discussions also included the anticipated changes in the FY 1997 RL/ALARA milestone packages.

- In an effort to increase Hanford employees' ALARA awareness, the ALARA/CCIP Program Office submitted several ALARA-related articles to the Hanford Reach (employee newspaper) during CY 1996. One of the articles explained the meaning of ALARA. These types of articles have prompted Hanford employees to contact the ALARA/CCIP Program Office, seeking additional information or clarification of ALARA-related topics.

- The WHC ALARA/CCIP Program was a major contributor in registering vendors and exhibitors for the Second Annual Hanford Health and Safety Exposition (Expo 1996) scheduled to be held in April 1996. Expo 1995 had over 5500 Hanford employees and families in attendance, and with the expanded number of exhibitors the Expo Steering Committee anticipates more involvement at Expo 1996.

  Due to the success of Expo '95, the ALARA Program will utilize Expo '96 to further the ALARA awareness efforts of Hanford employees and their families.

- Representatives of the WHC ALARA/CCIP Program Office conducted training sessions discussing the completion of ALARA Management Worksheet and Post ALARA Review. As part of these training sessions, the ALARA/CCIP Program Office demonstrated different techniques used to reduce exposure and limit the spread of contamination. In addition, emphasis was placed on the value of using the "Search Hanford Accessible Records Electronically" (SHARE) database to obtain and share lessons learned while involving radiological control personnel early in the planning process.

- An ALARA Program representative participated as a team member on the Spent Nuclear Fuels (SNF) ALARA Support Team, reviewing the planning for work in K Basins to prepare the facility for fuel removal. The jobs included cleaning/painting the basin walls, new water treatment systems, and debris removal.

- The ALARA Program Office and Radiological Engineering instructed SNF design engineering personnel on the requirements directed in DOE Orders, Hanford Site Radiological Control Manual, and Radiological Design Guide for designing new radiological facilities and the modification of existing facilities. This training is being conducted by Larry Waggoner, Ellen Atencio, and Dr. Larry McKay, who discuss the requirements of 10 CFR 835 pertaining to radiological design.

Additional information regarding these accomplishments or other ALARA Program accomplishments may be obtained by reviewing previous issues of this publication, or by contacting the WHC ALARA/CCIP Program Office (376-9035/376-0818).

1.4 CONTAMINATION CONTROL IMPROVEMENT PROJECT

The CCIP encourages reduction of radioactive surface contamination in operating areas and the environment of the Hanford Site. Reducing the number of contaminated areas and the severity of contamination will reduce the risk of skin contaminations and internal depositions, minimize personnel exposure, increase site productivity, and improve protection of the environment.

Due to the new posting definitions found in the Hanford Site Radiological Control Manual (HSRCM), the CCIP database was reconfigured during the fourth quarter of 1994. Currently, for CCIP purposes, the postings are grouped as follows: Airborne radioactivity areas (ARA); total contamination areas (CA) which include high CA, CA and soil CA; total radiation areas (RA) which include very high RA, high RA, and RA; and other radiological areas which includes radiological buffer area, fixed contamination area, radioactive material area (RMA), and underground radioactive materials. The result of these changes is there is no continuity between the fourth quarter and previous ones. Therefore, the only comparison in this section will be between the current quarter (first of CY 1996) and the previous ones.

The CCIP tracks CAs, as well as the categorization of areas controlled for radiological reasons and the quantification of said areas. It also tracks, separately from CAs, ARAs. The project identifies, tracks, and encourages the reduction of radioactive surface contamination and the number of other radiologically controlled areas. It addresses ARAs in indoor areas and CAs and other areas in indoor and outdoor operating areas.

1.4.1 Airborne Radioactivity Areas

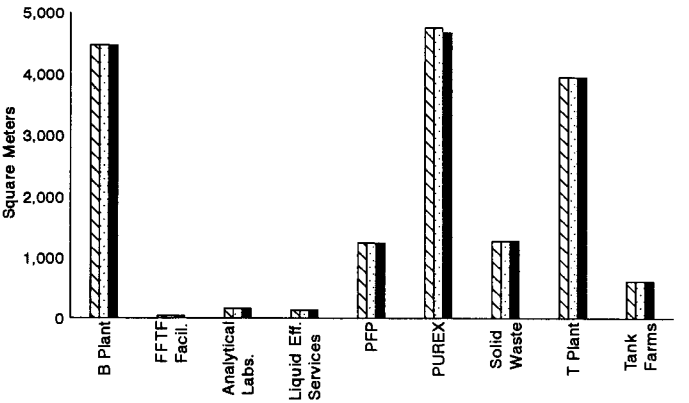
Airborne Radioactivity Areas are tracked separately from CAs because of the inherent increased risk to the occupational worker. Generally, ARAs are not as easy to decrease as surface contaminated areas (SCA) because they are related to the process and are engineered areas. They are decreased as the underlying process is changed or discontinued and the area is decontaminated (Figure 1-4-1). There were no reductions in ARAs during this quarter.

The number (as well as the total size) of ARAs established by facility group for the first quarter of 1996 is listed in Table 1-4-1. Please note that the number of ARAs may be arbitrary, in that one facility may elect to group all their ARAs together (for CCIP reporting purposes), while another may report each individual ARA separately.

1-4-1. Airborne Radioactivity Areas by Facility Group

Facility	No. of ARAs	ARAs in Sq. Meters	ARAs in Sq. Feet	Facility	No. of ARAs	ARAs in Sq. Meters	ARAs in Sq. Feet
B Plant	12	4,461	48,014	Solid Waste	1	1,272	13,689
Fast Flux Test Facility (FFTF)	1	42	450	T Plant	7	3,957	42,595
Analytical Laboratories	6	163	1,758	Tank Farms	11	612	6,586
Plutonium Finishing Plant (PFP)	6	1,241	13,361	Liquid Effluent Services	2	136	1,460
PUREX	19	4,669	50,261	Total	65	16,553	178,174

Figure 1-4-1. Airborne Radioactivity Areas



1st Qtr. CY 1995	4,486	42	163	136	1,241	4,756	1,272	3,957	612
2nd Qtr. CY 1995	4,472	42	163	136	1,241	4,756	1,272	3,957	612
3rd Qtr. CY 1995	4,472	42	163	136	1,241	4,756	1,272	3,957	612
4th Qtr. CY 1995	4,472	42	163	136	1,241	4,756	1,272	3,957	612
1st Qtr. CY 1996	4,461	42	163	136	1,241	4,669	1,272	3,957	612

1.4.2 Indoor and Outdoor CA

Most facilities have been reducing the amount of posted CAs indoor. During the first quarter of 1996 (January - March), there were reported reductions in total indoor CA of nearly 58 square meters (625 square feet) and in outdoor CA of nearly 1.3 hectares (3.3 acres). There were increases in indoor total CA of 52 square meters (555 square feet) reported during this period.

Overall, the amount of indoor and outdoor "total" CA has been decreasing (Figures 1-3-2 and 1-4-3).

Figure 1-4-2. Indoor Contaminated Areas

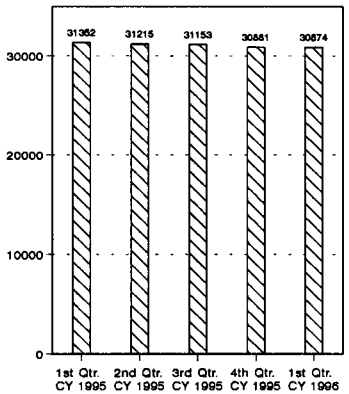
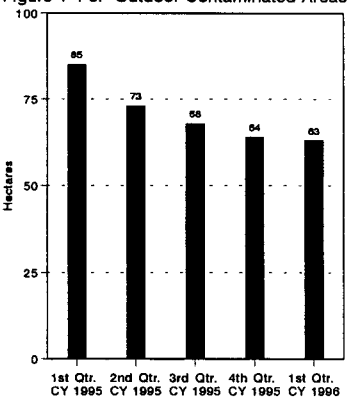


Figure 1-4-3. Outdoor Contaminated Areas



The number (as well as the total size) of high contamination areas (HCA) and CAs indoors, as established by facility group for the first quarter of CY 1996, is listed in Table 1-3-2 and for outdoor areas in Table 1-4-3. Please note that the number of HCAs and CAs may be arbitrary, in that one facility may elect to group all their CAs together (for CCIP reporting purposes), while another may report each individual CA separately.

Table 1-4-2 Indoor Contamination Areas and High-Contamination Areas

Indoor Areas	No. HCAs	Area in Meters	Area in Square Feet	No. CAs	Area in Meters	Area in Square Feet
300 Area Facilities	0	0	0	17	2,010	21,639
B Plant	3	3,815	41,066	40	1,317	14,172
FFTF Facilities	1	42	450	3	230	2,476
K Basins	0	0	0	5	2,925	31,484
Analytical Laboratories	4	154	1,654	50	2,158	23,232
Liquid Effluent Services	2	136	1,460	4	538	5,788
PFP	4	501	5,391	11	3,901	41,995
PUREX	12	4,322	46,525	37	3,896	41,934
Support Services	0	0	0	6	275	2,964
T Plant	4	2,624	28,246	11	684	7,361
Tank Farms	4	113	1,218	13	1,233	13,271
Total	34	11,707	126,010	197	19,167	206,316

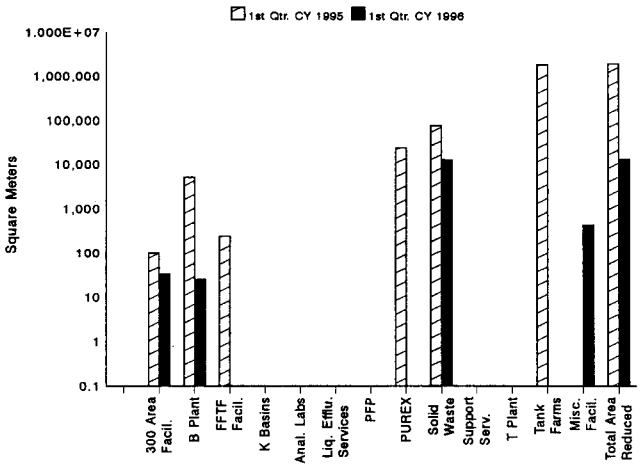
Table 1-4-3. Outdoor Contamination Areas

Outdoor Areas	No. CAs	Area in Hectares	Area in Acres	Outdoor Areas	No. CAs	Area in Hectares	Area in Acres
300 Area Facil.	1	0.0	0.1	Solid Waste	4	7.0	17.2
B Plant	10	4.5	11.1	Support Services	5	0.2	0.4
Environmental	5	1.2	3.0	Surplus Facilities	1	0.1	0.2
K Basins	2	0.3	0.7	T Plant	9	0.9	2.3
PUREX	11	6.8	16.8	Tank Farms	39	40.8	100.8
				TOTAL	87	61.7	152.5

1.4.3 CA Reduction - Indoor and Outdoor Areas

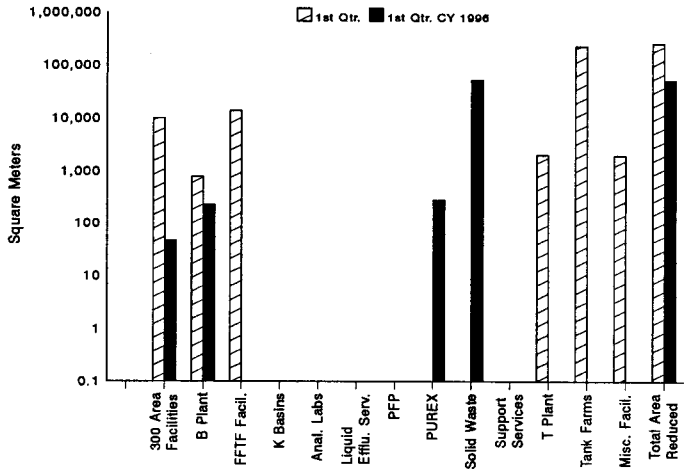
The CCIP tracks reduction efforts separately from the overall total posted areas and tracks and trends the total area reduced by facility on a quarterly basis. During the first quarter of 1996, a total of approximately 13,200 square meters (143,000 square feet) was released from CA posting. Specific reductions by facility per quarter (in square meters) are found in Figure 1-4-4.

Figure 1-4-4. CA Reduction by Facility Group - CY 1996



The CCIP also tracks reductions in areas posted less than CA (e.g. RAs, RMAs, etc.). During the same time period, a total of approximately 53,500 square meters (576,000 square feet) of "other" area was down-posted. Specific reductions by facility per quarter (in square meters) are found in Figure 1-4-5.

Figure 1-4-5. Other Area Reductions by Facility Group



1.5 ALARA PROGRAM LESSONS LEARNED THROUGH POST ALARA REVIEWS

The SHARE database is being utilized to provide an intelligent information retrieval system that allows users to create query topics to meet their individual needs. The WHC ALARA Program currently utilizes this database to redeploy ALARA protective measures, lessons learned, and corrective actions from radiological work performed onsite. The SHARE database is now available as a Network application for Hanford personnel and is used to assist in the process of designing, performing, and/or managing work projects. Completed copies of Post ALARA Reviews (PAR) are available electronically for review, retrieval, and use by planners, PICs, engineers, ALARA personnel, etc., in the creation of work packages and in performing prejob briefings.

Previously, there has been concern regarding the time delay for completing the PAR process after a task is complete. With the revisions to the WHC Occupational ALARA Program, changes were made to the "trigger levels" used for initiating the PAR process. The new "trigger levels" are identified in the *Hanford Site Radiological Control Manual* (HSRCM), Article 352. These new levels have provided more "value added" to the PAR process, require fewer PARs to be conducted, and allow for time and effort to be dedicated to the debriefing of radiological work.

The PAR process is a vital tool in helping to prevent complacency, reduce personnel exposure, monitor job performance, and identifying lessons learned and corrective actions for incorporation into similar job packages. The lessons learned help to evaluate the effectiveness of the exposure controls/work practices that were implemented and reduce future problems by applying these experiences. Indications demonstrate that the acceptance and ownership of the PAR process is being significantly enhanced. The SHARE has proven to be an effective method of transferring lessons learned and corrective actions between facilities.

Detailed information on completed PARs may be obtained by accessing the SHARE database, reviewing previous issues of this publication, or contacting the WHC ALARA/CCIP Program Office.

1.6 ALARA TRACKING AND MANAGEMENT SYSTEM

Over the past several months a concern has been raised regarding the use of the terms "annual exposure limits" and "administrative control levels." Annual exposure limits are limits on individual occupational radiation exposure established by federal law to minimize risk to workers. The limits are 5 rem per year to the whole body (internal plus external exposure), 15 rem per year to the lens of the eye, and 50 rem per year to any other individual organ or to the skin. These limits are absolutes that cannot be exceeded, with the exception of emergency situations and planned special exposures. If these limits are either accidentally or intentionally exceeded, a violation of federal law (10 CFR 835.202) has taken place, which may subject the contractor to civil and/or criminal penalties. Medical radiation exposures, both diagnostic and therapeutic, do not count toward these limits.

The "administrative control levels (ACL)" are lower levels of exposure that trigger certain actions to control an individual's exposure. The purpose of these levels is to keep both individual and collective doses ALARA.

Common sense would tell you that just setting everybody's dose limit at the regulatory maximum is not a good idea. Not everybody has dose minimization as a high priority, and without some control mechanism, some workers would not maintain exposures ALARA.

At Hanford, the "administrative control levels" start at 500 mrem per year per person, and progress to the DOE administrative control level of two rem per year per person. To go beyond the DOE administrative control level requires prior approval of a DOE secretarial officer or his or her designee. Each site contractor must also establish a more conservative (lower) control level that requires certain ALARA actions and internal approvals before exceeding that level.

There is also a cumulative lifetime control level of N rem, where N is the individual's age in years. While it is not a regulatory limit as described above, it is considered essential to an effective ALARA program.

There are a few aspects of ALARA that can still cause some confusion. For instance, radiation workers do not have review and approval authority over increases in their own administrative control levels. This is due to the establishment of regulatory limits, designed to identify the acceptable limits of risk in the workplace. By accepting employment, the radiological worker accepts the level of risk that goes with the job.

1.7 ALARA TRAINING

Effective and successful implementation of any ALARA program requires knowledge and understanding of the ALARA concepts. Consequently, training of personnel in ALARA, safety, and radiation principles is one of the most important elements in any effective ALARA program.

The majority of ALARA training at WHC is incorporated in other training packages as a basic theme that is reinforced throughout the training session. This reduces the number of ALARA-specific courses necessary and ensures that a consistent emphasis is placed on ALARA policy and philosophy.

During the first quarter of CY 1996, Technical Training conducted 1156 training sessions that included the ALARA theme throughout, with 4244 students completing the training. Some of the subjects covered in these training sessions included: Criticality Safety, Job Control Systems, and Radiological Worker Training, as well as Hanford General Employee Training. In addition, there is a specific emphasis placed on classic ALARA (radiological) work practices in all courses relating to radiological training.

Efforts to raise the ALARA awareness of Hanford employees will continue to be one of the highest priority tasks of the WHC ALARA/CCIP Program Office.

ALARA Training for Technical Support Personnel, Course 020900, was established to meet the requirements of the HSRCM, Article 652, while providing a valuable training tool for Hanford personnel. During the first quarter of CY 1996, 84 Hanford employees attended this training. This specialized ALARA Training provides Technical Support Personnel (engineers, schedulers, procedure writers) with ALARA principles, basic ALARA techniques, and exposure reduction techniques.

Training on ALARA documentation is provided in the courses outlined above, or specific documentation training may be obtained by contacting the WHC ALARA/CCIP Program Office (376-9035/376-0818). The training provided by the WHC ALARA/CCIP Program Office is provided with no direct charge to the facilities.

1.8 RADIOLOGICAL ENGINEERING

Radiological Engineering provides technical support to Hanford projects, programs, and facilities in the area of radiological control (including ALARA), with an emphasis on requirements, guidance, and best available technology. Examples of technical support provided by Radiological Engineering includes time motion studies to reduce worker dose, technical training seminars, shielding analysis, posting clarifications, and radiological design requirements training.

To utilize the technical resources provided by Radiological Engineering, please contact one of the Radiological Engineering staff members listed below:

Dale Cunningham	373-4582
Bill Decker	372-2881
Stan Jenkins	376-4803
Cliff Stephan	373-1325
Larry Waggoner	376-0818

1.9 ALARA POINTS-OF-CONTACT

The ALARA Points-of-Contact listing identifies the current ALARA Committee Chairperson designated by division, department, or facility management to coordinate the administration of the individual facility ALARA Program. Support personnel representing Dosimetry, ICF Kaiser, and Pacific Northwest National Laboratories (PNL) are also listed in Table 1-9-1.

Table 1-9-1. ALARA Council Members

ALARA/CCIP PROGRAM OFFICE		
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ALARA Program Senior Health Physics Analyst	L. O. Waggoner	6-0818
ALARA Program Senior Health Physics Analyst	S. H. Jenkins	6-9632
FACILITY ALARA COMMITTEES		
B Plant/WESF	S. L. Hathaway	2-0382
Facility Operations/PUREX	P. Greenbaum	2-1513
Facility Operations/Plutonium Finishing Plant	J. L. Shelor	3-2493
Fast Flux Test Facility	L. A. Nelsen	6-0603
K-Basins Operations	D. W. Humphrys, II	3-3143
Analytical Laboratories	M. D. Nuzum	3-5966
Solid Waste Disposal/T-Plant	T. L. Woodford	3-1573
300 Area Liquid Effluent Facilities	J. W. DeLine	2-3608
200 Area Effluent Treatment	B. A. Jones, Jr.	2-1188
Solid Waste Management	R. W. Whitlock	3-1737
East Tank Farms Transition Projects	R. J. Thomas	3-9893
West Tank Farms Transition Projects	R. L. Brown	2-2932
Characterizations Projects	J. E. Kane, II	6-8387
ORGANIZATIONAL ALARA COMMITTEES		
ICF Kaiser Hanford Operations	T. E. Chrisler	6-7090
ICF Kaiser Site Services	D. S. Stevenson	6-3312
ICF Kaiser TWRS	R. L. Nunley	3-9643
ICF Kaiser Transition Projects	M. J. Hartney	2-1711
ALARA COUNCIL SUPPORT PERSONNEL AND REPRESENTATIVES		
Dosimetry	D. B. Ottley	6-8214
Pacific Northwest National Laboratory	S. L. Keller	2-1457
Pollution Prevention	I. M. Leonard	6-1130

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Industrial Safety
& Hygiene

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2.0 INDUSTRIAL SAFETY AND HYGIENE

2.1 INTRODUCTION

The purpose of the Industrial Safety and Hygiene section is to provide a perspective on overall performance by WHC and BCS Richland, Incorporated (BCSR) on the Hanford Site. Additionally, this section provides an overall picture of WHC industrial safety and industrial hygiene activities through narrative and statistical data that identifies and statuses goals and initiatives, program development, and standards and training courses anticipated or completed and ready for use.

Topping the list of WHC Safety recognition during this reporting period is a commendation received from the National Safety Council (NSC). The NSC bestowed their Award of Honor upon WHC for significant reduction of incidence rates during CY 1995. The award is based upon a reduction of 48% or greater in cases involving days away from work, a 30% or greater reduction in the number of days away, and a 15% or greater reduction in the total number of occupational injuries and illnesses. The actual method and calculated percentages are listed in Table 2-1. Employee involvement, aggressive case management, and hazard mitigation are credited with making this award possible.

Table 2-1. Incidence Rate Calculation

Rates	Deaths & Cases Involving Days Away From Work	Days Away From Work	Total Cases
Unit incidence rates for 1995	0.41	6.35	3.64
Unit incidence rates for 3 prior years	1.15	34.07	4.17
Refuse systems industry rates for 1992-1994	1.22	22.55	4.71
PAR rates (1/2 the sum of lines 2 and 3)	1.19	28.31	4.44
% this unit's 1995 rates changed from PAR	-65.55%	-77.57%	-18.02%
Percent better than PAR required for this unit to achieve the: Award of Merit	-28.00%	-10.00%	15.00%
Award of Honor	-48.00%	-30.00%	15.00%

2.2 ONGOING INDUSTRIAL SAFETY AND HEALTH INITIATIVES

2.2.1 Voluntary Protection Program (VPP) - Noteworthy Activities During the Quarter

During the first calendar quarter, each department initiated activity in support of the President's Accident Prevention Council (PAPC) 1996 Safety Goal. Progress on the nine objectives contained within the goal was initially reported as a part of the March 21, 1996, PAPC meeting. The Goal, "To achieve continual improvement of our safety culture through use of the Voluntary Protection Program and Behavior-Based Safety," was designed to provide a clear safety focus and include meaningful activities for the PAPC to champion. The PAPC membership envisions several outcomes as a result of successful accomplishment of the objectives:

- Improved safety behaviors,
- Further prevention of accidents and injuries,
- Improved teamwork within and between organizations/facilities,

- Readiness for VPP recognition,
- 24-hour safety awareness,
- Enhanced hazard recognition capabilities of safety council members, and
- Improvements in communicating safety.

A DOE-HQ review team representing the Office of Environment, Safety and Health (EH), visited the Hanford Site during several weeks of the quarter. The 40-member Safety Management Evaluation Team (SMET) assessed the areas of management responsibility, comprehensive requirements, and competence commensurate with responsibility. As part of their new approach to oversight, they focused on the existence of management systems and programs (comparable approach to VPP). Plant/project areas selected for review within WHC were PFP, B Plant/WESF, Tank Farms, and K-Basins. Value-added worker involvement was a key emphasis. Preliminary observations cited a significantly more empowered and involved workforce. Inspection closeout is anticipated the first week of April.

The DOE-RL has successfully "resurfaced" the WHC VPP application with the DOE-HQ Office of Environmental Management (EM). Since the March 1995 resubmittal from WHC, there has been a perceived absence of progress in dispositioning the WHC request for consideration of status. In early February 1996, DOE-HQ identified a new point-of-contact from EM, Mr. Lou McGee. Both WHC and RL have requested a follow-up review of the current application by EM, to include clear identification of a path forward. A DOE HQ and RL response and further direction is expected during the second quarter.

During the fourth quarter of 1995, RL announced that they were considering a local VPP recognition program. The DOE-RL is currently evaluating the feasibility of the initiative.

2.2.1.1 Management Leadership. Management demonstrated visible support in the following areas:

- Through the PAPC, management empowered a review team (which included bargaining unit employees) to conduct oversight and evaluation of contracted laundry services for adequacy in cleaning protective clothing and respirators.

- Management is providing resources and time for involvement of safety council activities, especially those which influence improvement of behaviors.

- The Tank Waste Remediation Division (TWRS) has identified a management "Lead" to form a VPP Steering Committee and strengthen VPP implementation efforts. Committee meetings have commenced.

- Management is providing full support of the employee steering committee to organize and plan the 1996 Safety Expo.

- The Spent Nuclear Fuel Project sponsored a "Fuel for Success" Workshop, giving employees the opportunity to join teams to identify and help resolve project issues.

2.2.1.2 Employee Involvement. The Tank Waste Remediation System (TWRS) Engineering Safety Council developed and distributed VPP cards to promote and communicate the VPP message.

- The East Tank Farms Safety Council has developed a Lock and Tag training board as a "hands on" supplement to classroom training.

- The Emergency, Safety, and Quality Services Accident Prevention Council developed and transmitted a safety survey to it's members. The results were used in structuring division-level safety objectives for 1996.

- Conduct of Operations improvements at K-Basins have resulted in increased usage of craft personnel in work package development and procedure modification.

- To promote 24-hour safety awareness, the TWRS Administrative Safety Awareness Council sponsored and awarded prizes for participation in a safety coloring contest for sons and daughters of Division employees.

- The Safeguards and Security Safety Council developed safety observation forms for documenting critical behaviors.

2.2.1.3 Worksite Analysis. General activities completed or in progress are listed below.

- The Safety organization continues to conduct subcontractor safety and health performance oversight inspections through the Safety Operations Support Group.

- Comprehensive baseline hazard assessments were completed for the 200 Area Effluent Treatment Facility and Building 616, Hazardous Waste Storage Facility.

- The 200 West Tank Farm is working an initiative to incorporate worker safety and health into the Job Control System (JCS) to achieve improved performance.

- Company occupational injury/illness incidence rates continue to decrease due to increased focus on effective case management.

2.2.1.4 Hazard Prevention and Control. The WHC continues to implement effective controls to address identified and potential hazards. The following controls are in effect or being developed:

- Pilots are underway for work planning enhancements at K-Basins Spent Fuel Storage Facility, High-level Waste Tank Farms, and PUREX.

- The WHC is assisting DOE-RL in developing a standardized lockout/tagout procedure for the Hanford Site.

- Procurement and Materials Management is planning on implementing an employee idea to place "HEAVY" labels on certain packages to assist in back injury prevention.

- The FFTF established an employee/management review team to address proposed revisions to CM-1-10, Safety Manual, WKS-15, "Electrical Safety Standards."

- The Master Safety Rules have been incorporated into the CM-1-10, Safety Manual.

- The Hearing Conservation Standard has been approved and released for use.

2.2.1.5 Safety and Health Training. Westinghouse Hanford Company management recognizes the importance of training in the implementation of Managements' commitment to reduce employee exposure to hazards. The following training has been completed or is in development:

- K-Basins conducted special ALARA training for technical support personnel to assist them in application of ALARA principles in both operating practices, and design and modification of facilities.

- Over 130 PUREX employees completed a four-hour hazard recognition training course.

- Industrial Hygiene Programs (IHP) and WHC Training Services completed a joint effort of identifying IH standards/procedures and corresponding courses/classes which are scheduled to be revised or developed.

- The "Manager Safety Training '96" pilot class was completed.

- Work on the revisions to the current "Confined Space Entry" course are progressing.

2.2.2 Safety Meeting Improvement

Effective safety meetings, pre-job safety meetings, etc., are a cornerstone of any successful safety program. In an effort to improve the reporting of safety meetings, the Safety/Security Meeting Report form was revised. It now provides a mechanism for recording and tracking safety issues. The new form is available through Forms Control and as a site-wide computer WordPerfect® macro, GEF270.

2.2.2.1 Safety Meeting Materials. Many resources are available through the Safety Resource Center (SRC) to assist individuals with conducting effective safety meetings. Resources available include videos, literature, safety meeting guest speakers, and assistance with individual safety programs.

In addition to the lesson plans available on Hanford Information, there is also a listing of Safety Meeting Guest Speakers. These individuals provide a safety meeting presentation on their area of expertise or based on lessons-learned. The SRC Resource Video Catalog, along with "Safety Meeting Guidelines and Pointers," can also be located in this section of Hanford Information.

Employees are encouraged to share these resources at home, with families and friends. For assistance, contact the Safety Resource Center on 376-8990 or visit MO-286, 200 East Area, or contact Tracey O'Neal via cc:mail.

2.2.2.2 Safety Awareness Programs. For information regarding company wide health and safety awareness programs that have been implemented for prevention of occupational injuries, illnesses and accidents, contact 376-8990.

2.3 INDUSTRIAL HYGIENE PROGRAMS

2.3.1 WHC-CM-1-11, WKH 10, Hearing Conservation Program

The joint WHC and ICF KH "Hearing Conservation Program" has been approved and consolidates the WHC and ICF KH Hearing Conservation programs into a single document such that consistent and effective implementation of the requirements can be achieved. The program is available by accessing Hanford Information, under the Controlled Manual (WHC) listing,

WHC-CM-1-11, "Industrial Hygiene" section. Distribution of hard copy to controlled manual holders is tentatively scheduled for the end of April.

A compliance date of July 1, 1996, has been established. On this date, the previous Noise/Hearing Conservation Program located in WHC-CM-4-40, section 3.5, is effectively canceled. Two overview sessions of the program requirements have been scheduled in April for line management, industrial hygiene and safety professionals and others responsible for implementation.

Industrial Hygiene Programs is trying to transition this new program as effectively as possible. If you have questions or concerns, please contact the Safety Department Industrial Hygiene Programs group.

2.3.2 Respiratory Protection

Two important steps were finalized to help the efficiency and cost-effectiveness of the Respiratory Protection Program.

- The new Respiratory Protection Program was added to the Industrial Hygiene Manual WHC-CM-1-11. The compliance date is May 15, 1996.

- Secondly, the Process Change for Medical Qualifications was initiated. This is a joint effort by HEHF and WHC and will streamline the qualifications needed for respirator wearers and will reduce the numbers of respirator wearers on site. On site instructions have commenced and process should be on line as soon as we have buy-in from all contractors.

2.4 TOPICS OF INTEREST

2.4.1 Safety Resource Center

Safety Awareness and Performance has safety meeting literature available via Hanford Information, the Safety Meeting Section, on Hanford Local Area Network (HLAN) as a way to heighten safety awareness, encourage employee involvement, and make group safety meetings effective and informative.

The Safety Resource Center developed a poster-sized 12-Month Safety Meeting Theme Planner. This Planner, along with safety and health-related videos, literature, and safety meeting guest speakers, provides the workforce with an effective method for maintaining awareness and safety/health knowledge, all year long, while lessening the time impact on daily workload. This is accomplished by making the preparation of safety meetings more convenient.

Theme Planners were distributed during this quarter to each division-level Accident Prevention Council Chairperson, as well as to employees during a variety of forums such as Expo '96, safety meetings, etc.

The Planner contains information pertaining to each of these elements: Industrial Hygiene, health and wellness, construction, and worker safety. Topics being promoted, via this theme planner, are listed in Table 2-2. The 12-Month Safety Meeting Theme Planner (poster-size) can be obtained by calling Graphics (373-3140) and requesting a copy (Reference #2G9610195.1C).

Table 2-2. Safety Meeting Theme Planning

Month	Safety Meeting Topic Promoted	Month	Safety Meeting Topic Promoted
January	Bloodborne Pathogens Physical Fitness Lead (Poisoning)	July	Forklift Safety Water/Boating Safety Emergency Preparedness Driving/No Drinking
February	Heart and CPR Crime Prevention PPE	August	Electrical Safety Fall/Autumn Safety Prejob Planning
March	Repetitive Motion Disorders Healthy Diet Poison Prevention Office Housekeeping	September	Hazard Communication Machine Guarding Cholesterol and Diet Accident Investigation
April	Lifting & Material Handling Cancer Awareness Recreational Safety Confined Spaces	October	Portable Tool Safety Fire Safety Hearing Conservation
May	Lockout/Tagout Bike Safety Heat Stress Industrial Hygiene	November	Great American "Smokeout" Slips, Trips, & Falls Holiday Safety Winter Driving
June	Ergonomics Back Safety Summer Safety Asbestos	December	Chemical Laboratory Safety Inspections Home and Work Safety Improvement Planning Stress

2.4.2 Hanford Site Safety and Health Exposition "Expo '96"

The Hanford Site Safety and Health Exposition (Expo '96) is being sponsored by WHC, BCSR, ICF KH, HEHF, along with several other businesses and Union members. The event will be held April 10 and 11, 1996, at the Benton-Franklin County Fairgrounds.

Expo '96 will provide an interactive, fun and educational opportunity for employees and their families. Expo will target the "grassroots" workforce during the daytime and evenings will take on a theme of off-the-job, family safety.

This year's Expo is approximately one-third larger than last year's event; therefore greater attendance is expected to increase, with approximately 8,000 anticipated. Attendees will have an opportunity to participate in interactive demonstrations by on- and offsite personnel and to view and/or partake in the exhibits and demonstrations which illustrate how safety equipment, as well as health and wellness programs can protect an individual at work and off-the-job. Exhibits and demonstrations will occupy four buildings and many outside areas.

2.5 COMPANY-WIDE AND DEPARTMENT-LEVEL TRENDING AND ANALYSIS

The following information provides an overview of the incidents being reported on site in the areas of occupational injuries/illnesses, and government vehicle accidents. This is accomplished through the compilation of charts, trending information, and recommendations for improvement. The data has been tabulated and analyzed on both a company-wide level and for each department. Management is encouraged to share this information with employees as a way to heighten awareness, realizing that most injuries involve some element of an at-risk behavior. We need to continue to foster a safety culture where all individuals are comfortable looking out for not only their own safety, but the safety of coworkers as well.

All WHC/BCSR occupational injury/illness information is available via Soft Reporting on HLAN. This report is updated weekly. In addition to providing the number of accidents for each organizational code or facility, the report gives a description of each accident, including location, job-type, and cause of injury. This provides each manager and their employees with a means to focus on what types of accidents are occurring (for trending purposes), and ways to prevent recurrence.

Appendix B-1 provides a list of resources and services available to assist the workforce with injury prevention, accident investigation, and safety awareness efforts.

2.5.1 Occupational Injury/Illness Incidence Rates

WHC has experienced an increase in the occupational injury and illness incidence rates during the first quarter of CY 1996. Trends show this increase can be partially attributed to inattention to workplace activities due to the uncertainty Hanford employees currently face with recent reduction of force, reorganization, and reengineering efforts.

As a result of this increase, the President's Office has reinstituted the policy of prompt notification of, and involvement in, all injuries with the potential of resulting in lost and/or restricted time. Organizations have also been reminded of the importance of prompt reporting of all occupational injuries/illnesses to assure appropriate medical treatment is administered, continued communication between site medical staff and line management, and prejob safety planning to mitigate hazards.

Table 2-3. WHC Occupational Injury/Illness CY 1995 - CY 1996 Statistics Comparison

Time Period	First Aid Cases	First Aid Case Rate	Total Recordable Cases	Total Recordable Case Incidence Rate
CY 1995	762	7.76	395	4.02
1st Quarter CY 1995	156	6.97	72	3.22
1st Quarter CY 1996	110	6.41	73	4.26

Time Period	Recordable Cases Resulting in Lost/Restricted Workdays	Lost/Restricted Workday Case Incidence Rate	Cases Involving Days Away from Work	Lost Workday Away Only Case Incidence Rate	Cases Involving Days of Restricted Work Activity Only	Restricted Work Activity Only Case Incidence Rate
CY 1995	82	1.03	37	0.46	45	0.56
1st Quarter CY 1995	24	1.07	8	0.36	16	0.71
1st Quarter CY 1996	22	1.28	7	0.41	15	0.87

Time Period	No. of Lost/ Restricted Workdays	Lost/Restricted Workday Severity Rate	No. of Workdays Away Only	Workdays Away Only Severity Rate	No. of Days Restricted Work Activity	Restricted Work Activity Severity Rate
CY 1995	1899	23.81	738	9.25	1161	14.56
1st Quarter CY 1995	412	18.40	141	6.30	271	12.10
1st Quarter CY 1996	323	18.83	32	1.87	291	16.96

2.5.2 Lost/Restricted Workday Case Incidence Rates

The cumulative CY 1995 lost/restricted workday case incidence rate for the first quarter of CY 1996 (1.28) is 25% below the DOE CY 1991-93 average (1.70). However, the incidence rate increased 24% from the CY 1995 rate of 1.03.

WHC Experienced an increase in the severity of laceration type injuries during the first quarter of CY 1996. Investigation into the injuries determined that the primary cause of the increase was attributed to employees' inattention. Lack of personal protective equipment was not a contributing factor in most of the cases.

The control chart (Figure 2-2) plots the CY 1990 through CYTD 1996 monthly lost/restricted workday case incidence rates. A control line shift took place in May 1993 when WHC initiated its "Making Safety First: Campaign '93." The monthly lost/restricted case rate continues to be in control. The rate continues the CY 1995 trends.

Figure 2-1. WHC Lost/Restricted Workday Cases
Cumulative Incidence Rate

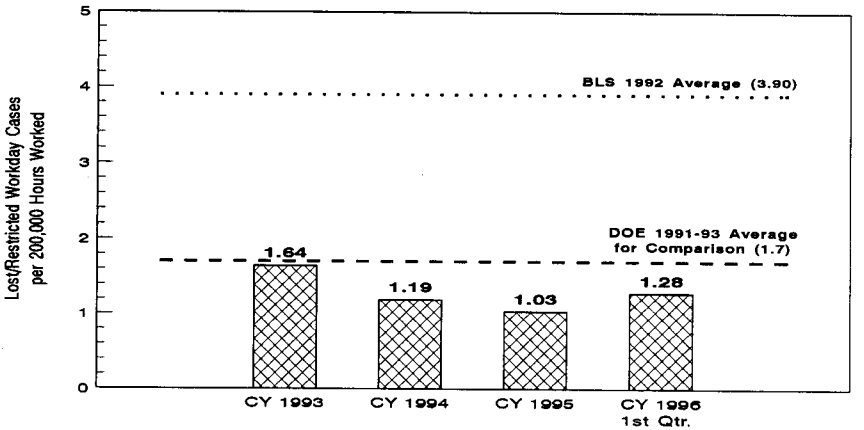
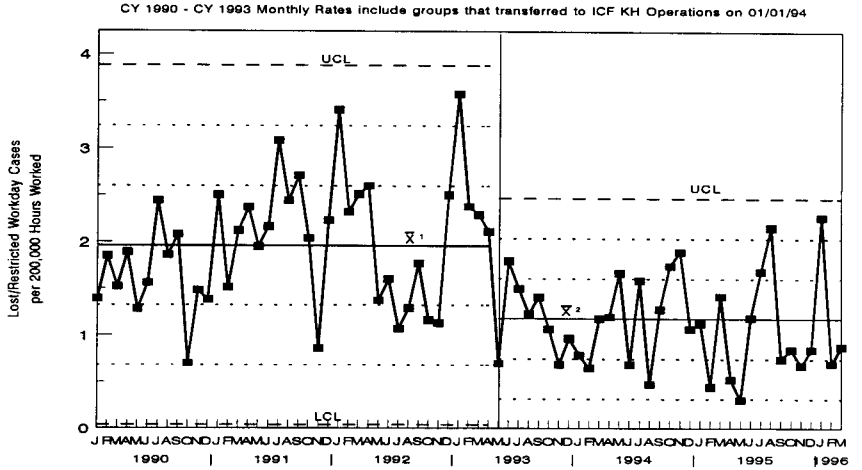


Figure 2-2. WHC Lost/Restricted Workday Case Monthly Incidence Rates
CY 1990 - CYTD 1996 - 3 Standard Deviations

CY 1990 - CY 1993 Monthly Rates include groups that transferred to ICF KH Operations on 01/01/94



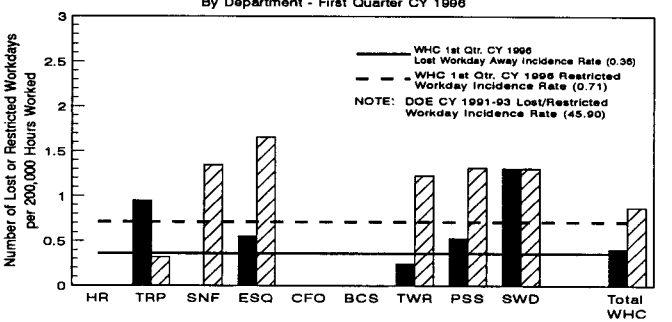
X̄ 1 = January 1990 - April 1993 Average-1.96 / X̄ 2 = May 1993 - December 1994 Average - 1.20

2.5.3 Lost/Restricted Workday Incidence Rates

Figure 2-3 provides the CY 1996 breakdown, by departments, of the lost workday away and restricted workday incidence rates. In some departments, accurate comparison cannot be achieved because of company reorganization.

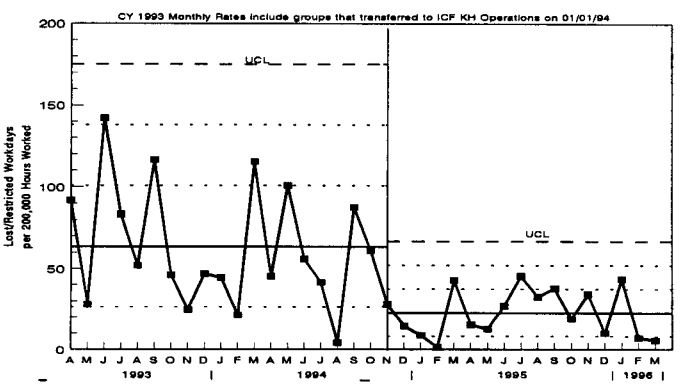
The control chart (Figure 2-4) plots the April CY 1993 through March CY 1996 monthly lost/restricted workday incidence rates. A control line shift took place in November 1994 when Case Management Training was completed.

Figure 2-3. WHC Lost/Restricted Workday Incidence Rates
By Department - First Quarter CY 1996



	HR	TRP	SNF	ESQ	CFO	BCS	TWR	PSS	SWD		Total WHC
Lost (Away) Workdays	0	0.95	0	0.55	0	0	0.25	0.53	1.31		0.41
Restricted Workdays	0	0.32	1.35	1.66	0	0	1.23	1.32	1.31		0.87

Figure 2-4. WHC Lost/Restricted WORKDAY Monthly Incidence Rates
May CY 1993 - March CY 1996 - 3 Standard Deviations



2.5.4 Total Recordable Case Incidence Rates

The cumulative CY 1996 total recordable case incidence rate (4.26) is 17% above the company's CY 1995 rate (3.64), and 14% above the DOE CY 1991-93 Average (3.73) (Figure 2-5).

The control chart (Figure 2-6) plots the CY 1990 through CY 1996 monthly total recordable case incidence rates. The monthly total recordable case rate continues to be in control.

Figure 2-5. WHC Total Recordable Cases
Cumulative Incidence Rate

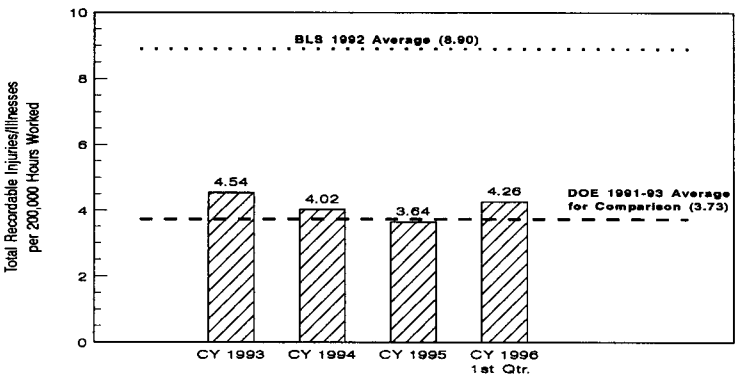
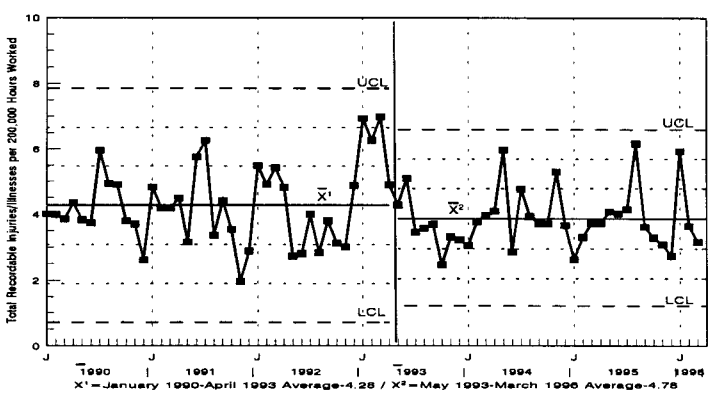


Figure 2-6. WHC Total Recordable Case Monthly Incidence Rates
CY 1990 - 1st Quarter CY 1996 - 3 Standard Deviations

CY 1990 - CY 1993 Monthly Rates include groups that transferred to ICF KH Operations on 01/01/94



2.5.5 Occupational Injuries/Illnesses By Type

Figure 2-7. First Aid Only by Type (110 Cases)

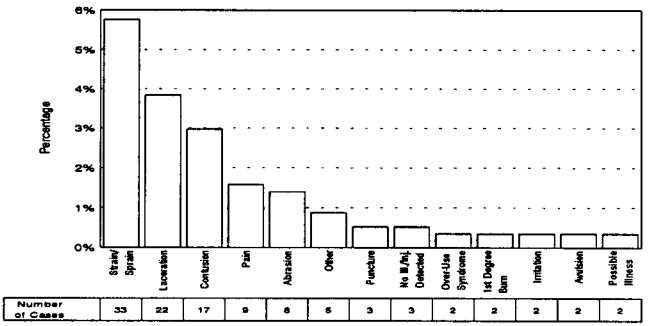


Figure 2-8. Total Recordable Injuries/Illnesses by Type (73 Cases)

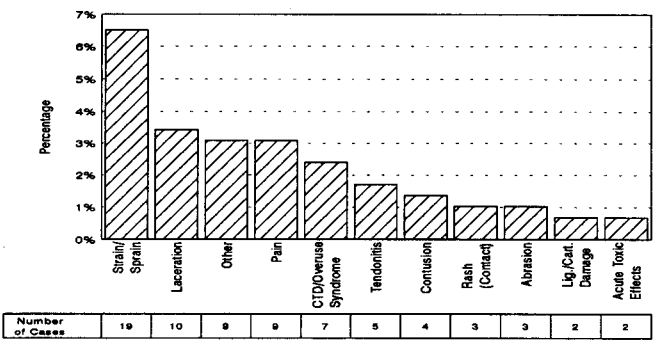
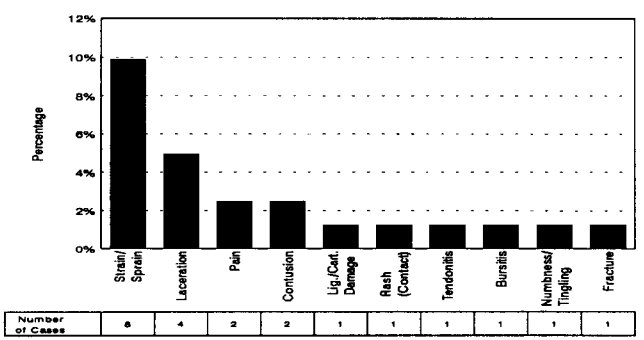


Figure 2-9. Lost/Restricted Workday Cases by Type (22 Cases)



2.5.6 Occupational Injuries/Illnesses By Body Group Injured

Figure 2-10. First Aid Only by Body Group Injured (110 Cases)

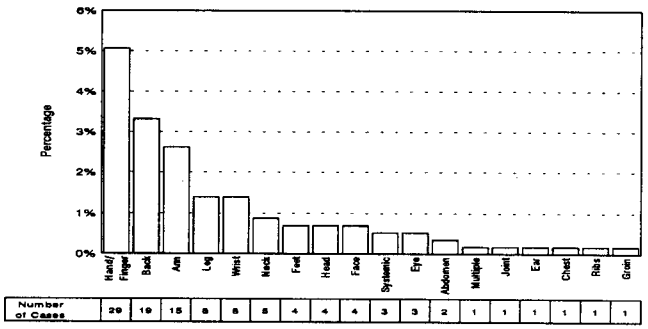


Figure 2-11. Total Recordable Injuries/Illnesses by Body Group Injured (73 Cases)

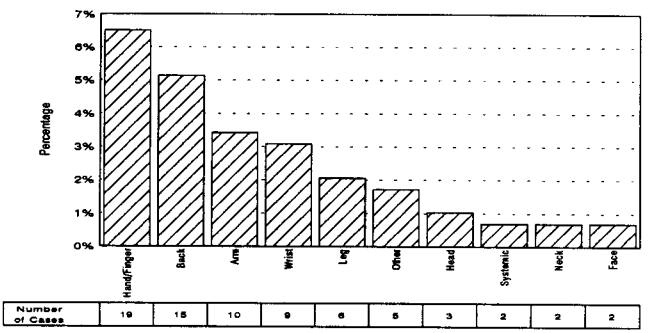
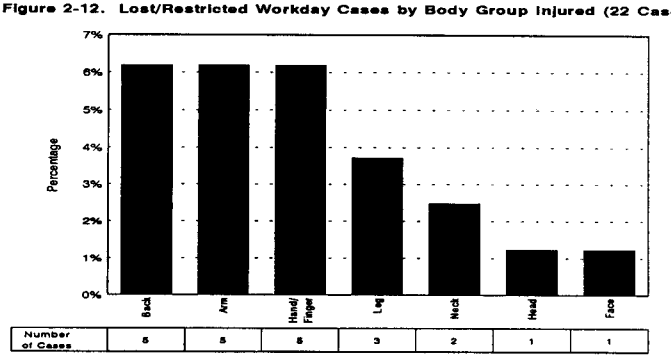


Figure 2-12. Lost/Restricted Workday Cases by Body Group Injured (22 Cases)



2.5.7 Occupational Injuries/Illnesses By Cause

Figure 2-13. First Aid Only by Cause (110 Cases)

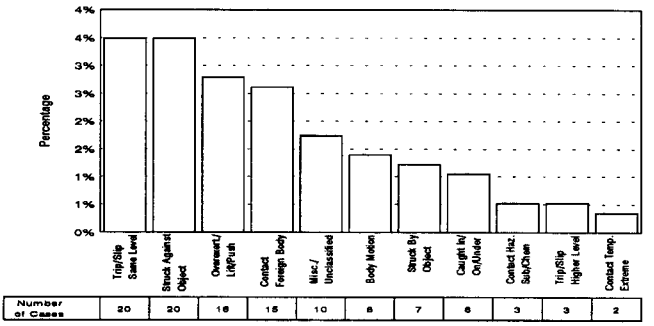


Figure 2-14. Total Recordable Injuries/Illnesses by Cause (73 Cases)

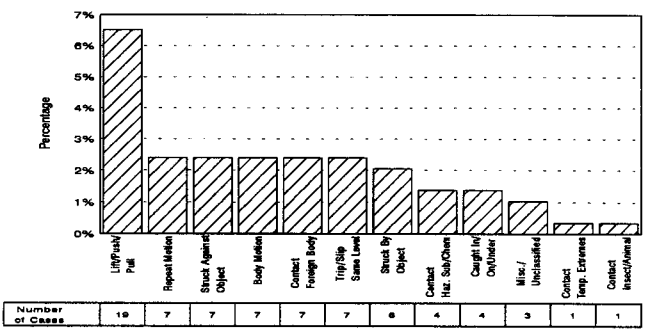
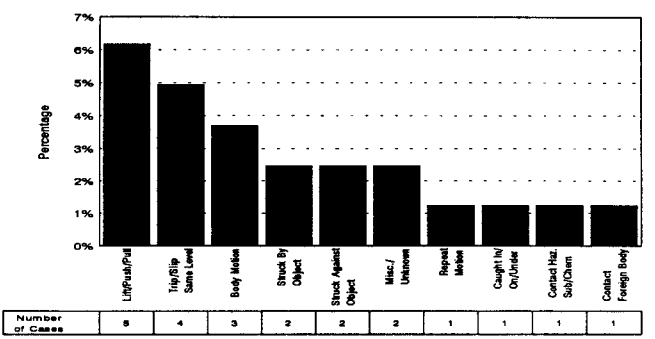


Figure 2-15. Lost/Restricted Workday Cases by Cause (22 Cases)



2.5.8 Occupational Injuries/Illnesses By Job Type

Figure 2-16. First Aid Only by Job Type (110 Cases)

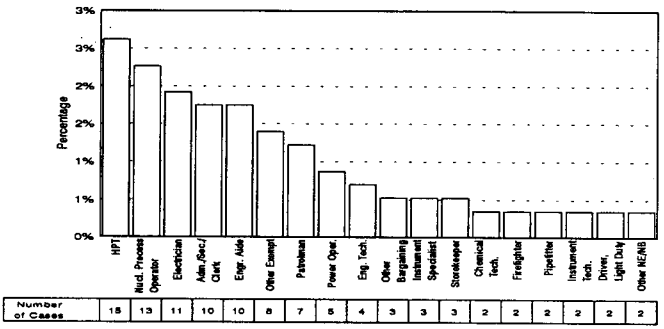


Figure 2-17. Total Recordable Injuries/Illnesses by Job Type (73 Cases)

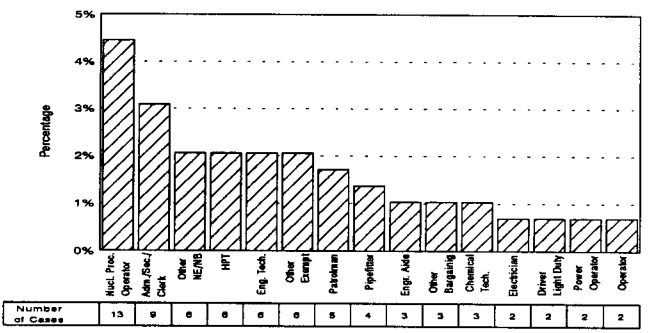
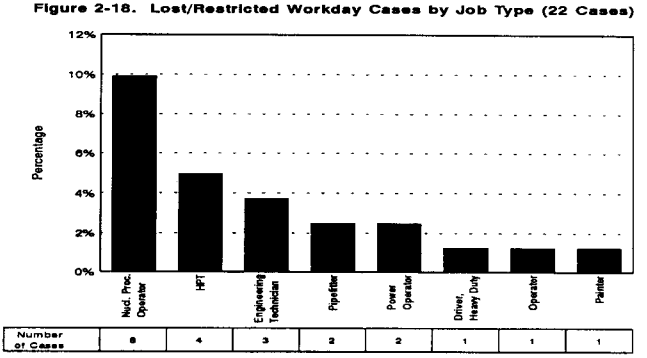


Figure 2-18. Lost/Restricted Workday Cases by Job Type (22 Cases)



2.5.9 Occupational Injuries/Illnesses By Facility

Figure 2-19. First Aid Only by Facility (110 Cases)

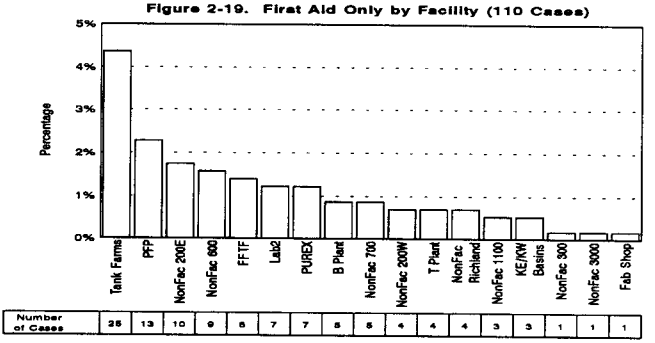


Figure 2-20. Total Recordable Injuries/Illnesses by Facility (73 Cases)

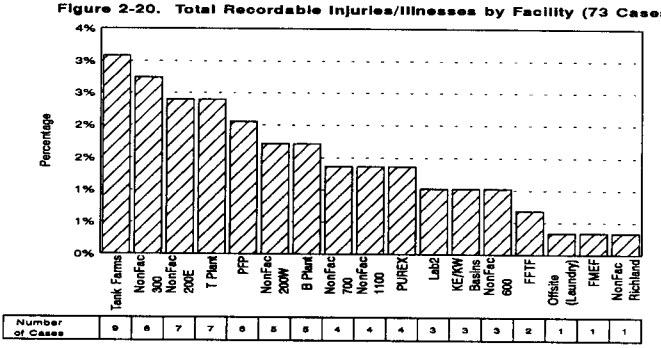
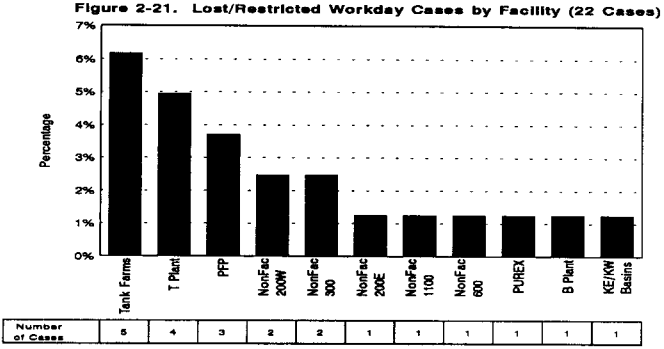


Figure 2-21. Lost/Restricted Workday Cases by Facility (22 Cases)



2.5.10 President's Office (PO)

The numbers in Table 2-4 reflects the job-related injuries/illnesses reported by HR personnel during.

Table 2-4. PO Occupational Injury/Illness - First Quarter CY 1995 and CY 1996 Statistics Comparison

Time Period	First Aid Cases	First Aid Case Rate	Total Recordable Cases	Total Recordable Case Incidence Rate
CY 1995	27	4.14	6	.92
1st Quarter CY 1995	5	2.38	3	1.43
1st Quarter CY 1996	0	0	0	0

Time Period	Recordable Cases Resulting in Lost/Restricted Workdays	Lost/Restricted Workday Case Incidence Rate	Cases Involving Days Away from Work	Lost Workday Away Only Case Incidence Rate	Cases Involving Days of Restricted Work Activity Only	Restricted Work Activity Only Case Incidence Rate
CY 1995	3	.46	1	.15	2	.31
1st Quarter CY 1995	1	.48	0	0	1	.48
1st Quarter CY 1996	0	0	0	0	0	0

Time Period	No. of Lost/ Restricted Workdays	Lost/ Restricted Workday Severity Rate	No. of Workdays Away Only	Workdays Away Only Severity Rate	No. of Days Restricted Work Activity	Restricted Work Activity Severity Rate
CY 1995	60	9.19	8	1.23	52	7.97
1st Quarter CY 1995	4	1.90	0	0	4	1.90
1st Quarter CY 1996	0	0	0	0	0	0

2.5.11 Transition Projects (TRP)

The numbers in Tables 2-5 and 2-6 reflect the job-related injuries/illnesses reported by TRP personnel.

Table 2-5. TRP Occupational Injury/Illness CY 1995 - First Quarter CY 1996 Statistics Comparison

Time Period	First Aid Cases	First Aid Case Rate	Total Recordable Cases	Total Recordable Case Incidence Rate
CY 1995	142	9.83	68	4.71
1st Quarter CY 1995	43	10.67	13	3.23
1st Quarter CY 1996	34	10.73	16	5.05

Time Period	Recordable Cases Resulting in Lost/Restricted Workdays	Lost/ Restricted Workday Case Incidence Rate	Cases Involving Days Away from Work	Lost Workday Away Only Case Incidence Rate	Cases Involving Days of Restricted Work Activity Only	Restricted Work Activity Only Case Incidence Rate
CY 1995	12	0.83	7	0.48	5	0.35
1st Quarter CY 1995	3	0.74	3	0.74	0	0
1st Quarter CY 1996	4	1.26	3	0.95	1	0.32

Time Period	No. of Lost/ Restricted Workdays	Lost/ Restricted Workday Severity Rate	No. of Workdays Away Only	Workdays Away Only Severity Rate	No. of Days Restricted Work Activity	Restricted Work Activity Severity Rate
CY 1995	148	10.25	20	1.38	128	8.86
1st Quarter CY 1995	3	0.74	3	0.74	0	0
1st Quarter CY 1996	85	26.83	14	4.42	71	22.41

Table 2-6. TRP Occupational Injuries/Illnesses By Type - First Quarter CY 1996

Type	All Cases (First Aid/ Recordable/ Lost/Restricted)	All Case Rate	Cases Resulting in Lost or Restricted Workdays	Lost or Restricted Workday Case Incidence Rate
All Strain/Sprain	0	0	0	0
Cumulative Trauma Disorder	1	0.31	0	0
All Other	53	16.73	19	6.00

2.5.12 Spent Nuclear Fuel Project (SNF)

The numbers in Tables 2-7 and 2-8 reflect the job-related injuries/illnesses reported by SNF personnel.

Table 2-7. SNF Occupational Injury/Illness CY 1995 - First Quarter CY 1996 Statistics Comparison

Time Period	First Aid Cases	First Aid Case Rate	Total Recordable Cases	Total Recordable Case Incidence Rate
CY 1995	30	10.90	7	2.54
1st Quarter CY 1995	12	16.62	1	1.38
1st Quarter CY 1996	3	4.05	3	4.05

Time Period	Recordable Cases Resulting in Lost/ Restricted Workdays	Lost/ Restricted Workday Case Incidence Rate	Cases Involving Days Away from Work	Lost Workday Away Only Case Incidence Rate	Cases Involving Days of Restricted Work Activity Only	Restricted Workday Activity Only Case Incidence Rate
CY 1995	0	2.54	1	0.36	0	0
1st Quarter CY 1995	0	0	1	1.38	0	0
1st Quarter CY 1996	1	1.35	0	0	1	1.35

Time Period	No. of Lost/ Restricted Workdays	Lost/ Restricted Workday Severity Rate	No. of Workdays Away Only	Workdays Away Only Severity Rate	No. of Days Restricted Work Activity	Restricted Work Activity Severity Rate
CY 1995	1	0.36	1	0.36	0	0
1st Quarter CY 1995	1	1.38	1	1.38	0	0
1st Quarter CY 1996	1	1.35	0	0	1	1.35

Table 2-8. SNF Occupational Injuries/Illnesses By Type - First Quarter CY 1996

Type	All Cases (First Aid/ Recordable/ Lost/Restricted)	All Case Rate	Cases Resulting in Lost or Restricted Workdays	Lost or Restricted Workday Case Incidence Rate
All Strain/Sprain	0	0	0	0
Cumulative Trauma Disorder	0	0	0	0
All Other	3	4.05	0	0

2.5.13 Emergency, Safety, Quality Services (ESQ).

The numbers in Tables 2-9 and 2-10 reflect the job-related injuries/illnesses reported by ESQ personnel.

Table 2-9. ESQ Occupational Injury/Illness CY 1995 - First Quarter CY 1996 Statistics Comparison

Time Period	First Aid Only Cases	First Aid Case Rate	Total Recordable Cases	Total Recordable Case Incidence Rate
CY 1995	130	9.83	71	5.37
1st Quarter CY 1995	35	8.71	21	5.23
1st Quarter CY 1996	16	8.88	7	3.88

Time Period	Recordable Cases Resulting in Lost/ Restricted Workdays	Lost/ Restricted Workday Case Incidence Rate	Cases Involving Days Away from Work	Lost Workday Away Only Case Incidence Rate	Cases Involving Days of Restricted Work Activity Only	Restricted Work Activity Only Case Incidence Rate
CY 1995	28	2.12	11	0.83	17	1.29
1st Quarter CY 1995	12	2.99	3	0.75	9	2.24
1st Quarter CY 1996	4	2.22	1	0.55	3	1.66

Time Period	No. of Lost/ Restricted Workdays	Lost/ Restricted Workday Severity Rate	No. of Workdays Away Only	Workdays Away Only Severity Rate	No. of Days Restricted Work Activity	Restricted Work Activity Severity Rate
CY 1995	548	41.44	130	9.83	418	31.61
1st Quarter CY 1995	12	2.99	3	0.75	9	2.24
1st Quarter CY 1996	4	2.22	1	0.55	3	1.66

Table 2-10. ESQ Occupational Injuries/Illnesses By Type - First Quarter CY 1996

Type	All Cases (First Aid/ Recordable/ Lost/Restricted)	All Case Rate	Cases Resulting in Lost or Restricted Workdays	Lost or Restricted Workday Case Incidence Rate
All Strain/Sprain	0	0	0	0
Cumulative Trauma Disorder	1	1.35	0	0
All Other	23	12.76	4	2.22

2.5.14 Chief Financial Office (CFO)

The numbers in Tables 2-11 and 2-12 reflect the job-related injuries/illnesses reported by CFO personnel.

Table 2-11. CFO Occupational Injury/Illness CY 1995 - First Quarter CY 1996 Statistics Comparison

Time Period	First Aid Cases	First Aid Case Rate	Total Recordable Cases	Total Recordable Case Incidence Rate
CY 1995	17	3.32	13	2.54
1st Quarter CY 1995	5	3.38	1	0.68
1st Quarter CY 1996	4	4.82	2	2.41

Time Period	Recordable Cases Resulting in Lost/Restricted Workdays	Lost/ Restricted Workday Case Incidence Rate	Cases Involving Days Away from Work	Lost Workday Away Only Case Incidence Rate	Cases Involving Days of Restricted Work Activity Only	Restricted Work Activity Only Case Incidence Rate
CY 1995	4	0.78	3	0.59	1	0.20
1st Quarter CY 1995	1	0.68	1	0.68	0	0
1st Quarter CY 1996	0	0	0	0	0	0

Time Period	No. of Lost/ Restricted Workdays	Lost/ Restricted Days Severity Rate	No. of Workdays Away Only	Workdays Away Only Severity Rate	No. of Days Restricted Work Activity	Restricted Work Activity Severity Rate
CY 1995	236	46.03	190	37.06	46	8.97
1st Quarter CY 1995	54	36.46	54	36.46	0	0
1st Quarter CY 1996	0	0	0	0	0	0

Table 2-12. CFO Occupational Injuries/Illnesses By Type - First Quarter CY 1996

Type	All Cases (First Aid/ Recordable/ Lost/Restricted)	All Case Rate	Cases Resulting in Lost or Restricted Workdays	Lost or Restricted Workday Case Incidence Rate
All Strain/Sprain	0	0	0	0
Cumulative Trauma Disorder	1	1.21	0	0
All Other	5	6.00	1	1.21

2.5.15 BCS Richland, Incorporated (BCSR).

The numbers in Tables 2-13 and 2-14 reflect the job-related injuries/illnesses reported by BCSR personnel.

Table 2-13. BCSR Occupational Injury/Illness CY 1995 - First Quarter CY 1996 Statistics Comparison

Time Period	First Aid Cases	First Aid Case Rate	Total Recordable Cases	Total Recordable Case Incidence Rate
CY 1995	37	4.12	28	3.12
1st Quarter CY 1995	14	5.31	8	3.03
1st Quarter CY 1996	2	1.09	3	1.64

Time Period	Recordable Cases Resulting in Lost/Restricted Workdays	Lost/Restricted Workday Case Incidence Rate	Cases Involving Days Away from Work	Lost Workday Away Only Case Incidence Rate	Cases Involving Days of Restricted Work Activity Only	Restricted Work Activity Only Case Incidence Rate
CY 1995	4	0.45	2	0.22	2	0.22
1st Quarter CY 1995	1	0.38	1	0.38	0	0
1st Quarter CY 1996	0	0	0	0	0	0

Time Period	No. of Lost/ Restricted Workdays	Lost/ Restricted Workday Severity Rate	No. of Workdays Away Only	Workdays Away Only Severity Rate	No. of Days Restricted Work Activity	Restricted Work Activity Severity Rate
CY 1995	152	16.92	87	9.69	65	7.24
1st Quarter CY 1995	20	7.58	4	1.52	16	6.07
1st Quarter CY 1996	0	0	0	0	0	0

Table 2-14. BCSR Occupational Injuries/Illnesses By Type - First Quarter CY 1996

Type	All Cases (First Aid/ Recordable/ Lost/Restricted)	All Case Rate	Cases Resulting in Lost or Restricted Workdays	Lost or Restricted Workday Case Incidence Rate
All Strain/Sprain	0	0	0	0
Cumulative Trauma Disorder	1	0.55	0	0
All Other	4	2.19	0	0

2.5.16 Tank Waste Remediation System.

The numbers in Tables 2-15 and 2-16 reflect the job-related injuries/illnesses reported by TWRS personnel.

Table 2-15. TWRS Occupational Injury/Illness CY 1995 - First Quarter CY 1996 Statistics Comparison

Time Period	First Aid Cases	First Aid Case Rate	Total Recordable Cases	Total Recordable Case Incidence Rate
CY 1995	117	7.16	41	2.51
1st Quarter CY 1995	22	5.61	7	1.58
1st Quarter CY 1996	27	6.65	10	2.46

Time Period	Recordable Cases Resulting in Lost/Restricted Workdays	Lost/Restricted Workday Case Incidence Rate	Cases Involving Days Away from Work	Lost Workday Away Only Case Incidence Rate	Cases Involving Days of Restricted Work Activity Only	Restricted Work Activity Only Case Incidence Rate
CY 1995	17	1.03	9	0.55	8	0.49
1st Quarter CY 1995	4	1.02	1	0.25	3	0.76
1st Quarter CY 1996	6	1.48	1	0.25	5	1.83

Time Period	No. of Lost/ Restricted Workdays	Lost/ Restricted Workday Severity Rate	No. of Workdays Away Only	Workdays Away Only Severity Rate	No. of Days Restricted Work Activity	Restricted Work Activity Severity Rate
CY 1995	457	27.96	229	14.01	228	13.95
1st Quarter CY 1995	43	10.96	1	0.25	42	10.70
1st Quarter CY 1996	69	16.99	1	0.25	68	16.99

Table 2-16. TWRS Occupational Injuries/Illnesses By Type - First Quarter CY 1996

Type	All Cases (First Aid/ Recordable/ Lost/Restricted)	All Case Rate	Cases Resulting in Lost or Restricted Workdays	Lost or Restricted Workday Case Incidence Rate
All Strain/Sprain	0	0	0	0
Cumulative Trauma Disorder	3	0.74	0	0
All Other	41	10.10	6	1.48

2.5.17 Projects Site Services (PSS)

The numbers in Tables 2-17 and 2-18 reflect the job-related injuries/illnesses reported by PSS personnel.

Table 2-17. PSS Occupational Injury/Illness CY 1995 - First Quarter CY 1996 Statistics Comparison

Time Period	First Aid Cases	First Aid Case Rate	Total Recordable Cases	Total Recordable Case Incidence Rate
CY 1995	35	3.95	22	2.48
1st Quarter CY 1995	12	4.82	8	3.21
1st Quarter CY 1996	17	5.62	20	6.61

Time Period	Recordable Cases Resulting in Lost/Restricted Workdays	Lost/Restricted Workday Case Incidence Rate	Cases Involving Days Away from Work	Lost Workday Away Only Case Incidence Rate	Cases Involving Days of Restricted Work Activity Only	Restricted Work Activity Only Case Incidence Rate
CY 1995	7	0.79	1	0.11	7	0.79
1st Quarter CY 1995	2	0.80	0	0	2	0.80
1st Quarter CY 1996	5	1.65	1	0.33	4	1.32

Time Period	No. of Lost/ Restricted Workdays	Lost/ Restricted Workday Severity Rate	No. of Workdays Away Only	Workdays Away Only Severity Rate	No. of Days Restricted Work Activity	Restricted Work Activity Severity Rate
CY 1995	188	21.21	51	5.76	157	17.72
1st Quarter CY 1995	5	2.01	0	0	5	2.01
1st Quarter CY 1996	114	37.68	2	0.66	112	37.01

Table 2-18. PSS Occupational Injuries/Illnesses By Type - First Quarter CY 1996

Type	All Cases (First Aid/ Recordable/ Lost/Restricted)	All Case Rate	Cases Resulting in Lost or Restricted Workdays	Lost or Restricted Workday Case Incidence Rate
All Strain/Sprain	0	0	0	0
Cumulative Trauma Disorder	2	0.66	1	0.33
All Other	55	18.18	1	0.33

2.5.18 Solid Waste Disposal (SWD)

The numbers in Tables 2-19 and 2-20 reflect the job-related injuries/illnesses reported by SWD personnel.

Table 2-19. SWD Occupational Injury/Illness CY 1995 - First Quarter CY 1996 Statistics Comparison

Time Period	First Aid Cases	First Aid Case Rate	Total Recordable Cases	Total Recordable Case Incidence Rate
CY 1995	30	8.75	20	5.83
1st Quarter CY 1995	6	6.35	4	4.23
1st Quarter CY 1996	7	9.19	6	7.88

Time Period	Recordable Cases Resulting in Lost/Restricted Workdays	Lost/Restricted Workday Case Incidence Rate	Cases Involving Days Away from Work	Lost Workday Away Only Case Incidence Rate	Cases Involving Days of Restricted Work Activity Only	Restricted Work Activity Only Case Incidence Rate
CY 1995	5	1.46	2	0.58	3	0.88
1st Quarter CY 1995	0	0	0	0	0	0
1st Quarter CY 1996	2	2.63	1	1.31	1	1.31

Time Period	No. of Lost/ Restricted Workdays	Lost/ Restricted Workday Severity Rate	No. of Workdays Away Only	Workdays Away Only Severity Rate	No. of Days Restricted Work Activity	Restricted Work Activity Severity Rate
CY 1995	78	22.75	22	6.42	56	16.33
1st Quarter CY 1995	0	0	0	0	0	0
1st Quarter CY 1996	10	13.13	5	6.56	5	6.56

Table 2-20. SWD Occupational Injuries/Illnesses By Type - First Quarter CY 1996

Type	All Cases (First Aid/ Recordable/ Lost/Restricted)	All Case Rate	Cases Resulting in Lost or Restricted Workdays	Lost or Restricted Workday Case Incidence Rate
All Strain/Sprain	0	0	0	0
Cumulative Trauma Disorder	0	0	0	0
All Other	15	19.69	2	2.63

2.5.19 ICF Kaiser Hanford Company (ICF KH) Lost/Restricted Workday Cases/Rates By DOE Computerized Accident/Incident Reporting (CAIRS) Organization

The ICF KH cumulative first quarter CY 1996 lost/restricted workday case rate (3.43) is 15% below the company's three-year average (4.05) (Figure 2-22).

The ICF KH cumulative first quarter CY 1996 lost/restricted workday incidence (severity) rate (44.53) is 62% below the company's three-year average (118.45) (Figure 2-23).

Figure 2-22. ICF KH Occupational Injury/Illness Lost/Restricted Workday CASE Rates - 1st Quarter CY 1996

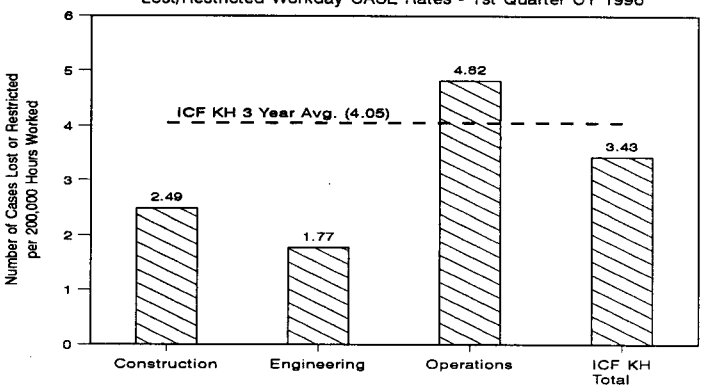
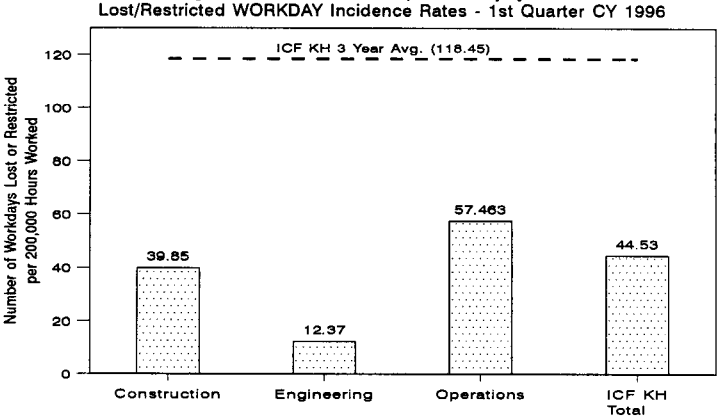


Figure 2-23. ICF KH Occupational Injury/Illness Lost/Restricted WORKDAY Incidence Rates - 1st Quarter CY 1996



2.5.20 WHC Recordable Government Motor Vehicle Accidents

There were 4 recordable government vehicle accidents (resulting in $1,000 damage or greater) reported by WHC employees during first quarter CY 1996, which was the same number reported for first quarter CY 1995. The WHC first quarter CY 1996 recordable government vehicle accident rate is 5.57, which is above the first quarter CY 1995 rate of 3.41, and also above the DOE CY 1991-93 average of 2.60.

The WHC CY 1995 recordable government vehicle dollar loss rate (from the recordable vehicle accidents) is 11.57, which is below the company's first quarter CY 1995 rate of 13.05 and also above DOE CY 1991-93 average of 4.17.

Tables 2-21 and 2-22 provide a breakdown of the recordable government vehicle accidents by organization, and type of accident. Refer to Appendix B-2 for a complete description of the calendar year losses.

Table 2-21. WHC First Quarter 1996 - Recordable Vehicle Accidents By Organization

Organization Code	Organization	Number of Losses	Total Dollar Loss
77	Tank Farm Projects	2	$ 3,818
8H	Pest Management	1	$ 1,244
87	Solid Waste Disposal	1	$ 2,482
WHC Total		4	$ 7,544

Table 2-22. WHC First Quarter 1996 - Recordable Vehicle Accidents By Cause of Accident

Cause of Accident	Number of Losses	Total Dollar Loss
Operator Error-Backing	2	$4,011
Operator Error-Clearance	0	$ 0
Operator Error-Other	1	$2,289
Non-Operator Error	1	$ 1,244
WHC Total	4	$ 7,544

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3.0 RADIOLOGICAL SAFETY

Radiological health and safety of the WHC and ICF KH workforce is ensured through the development and effective implementation of the radiological control program. Occupational radiation safety is the primary focus of the WHC Radiological Control Program. This section provides management with a perspective on performance of the Radiological Control organization in implementing processes that seek individual and collective doses to levels ALARA .

3.1 RADIOLOGICAL CONTROL PROGRAM PERFORMANCE

In this section, key performance trends and program accomplishments throughout the first quarter of CY 1996 are discussed.

3.1.1 Key Performance Trends

Performance data for this reporting period reflects improvements in most areas for the WHC Radiological Control Program. Compliance and customer performance for this reporting period continues to be good for the Radiological Control Program. This is primarily led by continued incremental gains in improving the technical competence of the staff, reengineered activities in the central Radiological Control organization to improve efficiency, and the development of site/facility specific Radiological Control path-forward plans.

3.1.2 Program Accomplishments

3.1.2.1 Reengineered WHC Radiological Control Central Support Group Making Progress. The WHC Radiological Control Central Support Group (CSG) structure was implemented at the end of January. Since implementation, the CSG has completed a cognizant responsibilities assignment matrix for critical WHC Radiological Control program technical standards with site wide applicability (WHC-CM-4-14 and WHC-IP-0718). The use of broader skills and the increased academic credentials is enabling the CSG to look at standards and radiological operations from a fresh perspective and address concerns previously expressed by external review groups.

3.1.2.2 WHC 10 CFR 835 Compliance Update. January 1, 1996, marked the end of the year-long WHC effort to achieve fully-documented compliance with all 234 requirements of the 10 CFR 835 rule on Occupational Radiation Protection. Careful management attention is required to maintain full compliance with each requirement of 10 CFR 835. Since the Radiation Protection Program for 10 CFR 835 was approved (June 27, 1995) a total of four non compliance notification reports to 10 CFR 835 have been written. Three in CY 1995, and one in CY 1996. A memorandum of agreement has also been established between ICF-KH and WHC defining roles and responsibilities under 10 CFR 835. Additionally, the WHC Radiological Control CSG is offering technical seminars on 10 CFR 835 and the Price Anderson Amendments Act. The next seminar is scheduled for May 17, 1996.

3.1.2.3 First Fully Implemented Center of Expertise (COE). WHC Radiological Control established it's COE on February 1, 1996. To date, accomplishments have been realized for the COE which include:

- Implementing a process for identifying, prioritizing, resolving, and formally documenting COE decisions;

- Identifying the skills available and the capabilities necessary to support Radiological Control functions in the line Radiological Control organizations;

- Approval of draft evaluation criteria for the Facility Evaluation Board (FEB) pilot program; and approving the design of the Radiological Control Interpretive Authority process.

The COE is currently addressing technical issues on volumetric release policy, establishing a comprehensive Radiological Control technical basis, a schedule and topic list of technical seminars for company personnel, and the streamlining of requirements and good practices for improved cost effectiveness.

3.1.2.4 Fully Implemented CSG. Since implementation (January 29, 1996), the CSG has furnished technical support for a number of the COE accomplishments and provides sitewide services by tracking 10 CFR 835 compliance and administering the ALARA Program for WHC, performing sitewide tracking and trending of radiological problems, providing an interface for the WHC FEB, and coordinating Radiological Control site training activities. The CSG is currently formulating a "Completed Decision Making Package" for the restructuring of the present Radiological Control procedures policy.

3.1.2.5 Radiological Control Improvement Action Plans. Per the request of the Defense Nuclear Facilities Safety Board (DNFSB), WHC developed action plans for radiological improvements within the company. Progress on these new opportunities for improvement have already been realized which include: Upgrading of technical competence of the Radiological Control staff; establishment of a near-term, focused plan(s) of action for overall radiological control, as well as facility-specific improvements; early successes in reengineering efforts; monitoring of radiological control performance; reductions of radiological hazards, and; the establishment of consistent Radiological Control assessment criteria for facilities and its use by the FEB to provide uniform standards against which all facilities can be assessed.

3.1.2.6 Formal DOE-HQ (EH-22) and DNFSB Concerns Mitigated. The WHC Radiological Control Organization and DOE-RL were successful in deterring the issuance of a formal DOE-HQ (EH-22) concern and DNFSB Recommendation. The EH-22 team concern was related to proper hazards analysis, work planning, dosimetry, repeat events, and management oversight. The DNFSB raised concerns specific to Radiological Control, which included inadequate depth of technical competence in existing Radiological Control staff, and field implementation at facilities. The "Radiological Control Path Forward," as well as prompt and aggressive corrective actions helped mitigate these concerns. In addition, the EH-22 team identified the following positive observations: Good relationships between Operations, Maintenance and Radiological Control, and improvements with work planning noted at K Basins; improved union relations with HAMTC; there is an appropriate focus on safety at Hanford; improvements with respect to the reengineering efforts; improvements at PFP as a result of curtailment and decentralization of ES&H, and; enhanced work planning, integrated teaming, involving workers, and workers identifying applicable requirements (enhanced accountability and worker responsibility through reengineering).

3.2 EXTERNAL DOSIMETRY

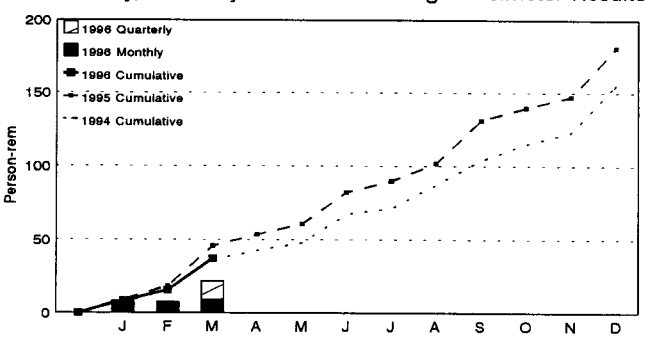
The protection of worker health and safety is of paramount concern within WHC. Since the Hanford Site is one of the largest nuclear sites in the nation, radiation safety is a key element in the protection program. The measurement of accumulated annual dose provides an indicator of the effectiveness of WHC radiation work practices and the ALARA Program with consideration given to fluctuating operating activities. Internal dose has only been included where noted in the whole body data reported in this section. It has been excluded for comparison purposes; previous year's data does not include internal dose. There has been no committed effective dose equivalent (CEDE) assigned for CY 1996 from internal depositions.

3.2.1 Occupational Collective Dose

Record dose reflected in this report is for period ending March 31, 1996. Numbers reflect data available from the Radiological Exposure (REX) system on April 25, 1996.

3.2.1.1 Cumulative Annual Occupational Collective Dose. The Figure 3-2-1 chart data includes WHC, BCSR, and ICF KH employee exposure. The first quarter CY 1996 results represent the exposure of 1,913 quarterly-badged employees and an average of 846 monthly-badged employees.

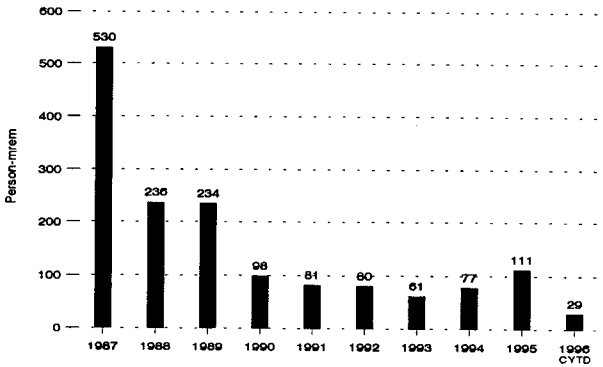
Figure 3-2-1. Monthly, Quarterly & Annual Exchange Dosimeter Results



1996 Quarterly				12.5									
1996 Monthly	0	8.13	7.31	9.17									
1996 Cumulative	0	8.13	15.44	37.11									
1995 Cumulative	0	9.2	18.2	45.6	53.5	60.6	82.2	89.8	101.8	131.1	139.8	147.2	181
1994 Cumulative	0	7	15	36.1	42.6	47.8	67.2	71.3	87.2	103.9	115	122.8	155.3

3.2.1.2 Individual Radiation Dose. The cumulative average dose in mrem for monthly badged personnel for CY 1987 through March 1996 is depicted in Figure 3-2-2. The average dose is 29 mrem for this year through March which extrapolates to 116 man-rem at year end. With only three months data, however, it is too early to compare the exposure total with previous years.

Figure 3-2-2. Monthly Badged Employee Average Radiation Dose
CY 1996 Period Ending Date - March 31, 1996

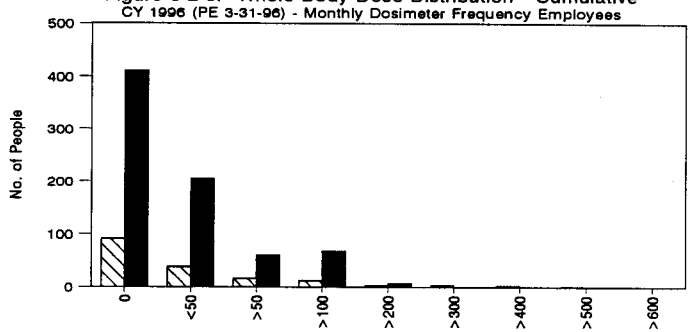


3.2.2 High Whole Body Dose Evaluation

Figure 3-2-3 illustrates whole body dose distribution, received onsite, among all WHC, BCSR, and ICF KH monthly frequency badged employees. Table 3-2-1 lists workers having the highest whole-body doses received onsite, during CY 1996, for both monthly and quarterly frequency badged employees.

During the first quarter, there were no unplanned, whole body exposures resulting in a dose greater than the administrative control level of 500 mrem/year.

Figure 3-2-3. Whole Body Dose Distribution - Cumulative
CY 1996 (PE 3-31-96) - Monthly Dosimeter Frequency Employees



	0	<50	>50	>100	>200	>300	>400	>500	>600
ICF KH Mo.	91	38	16	12	3	3	2	1	0
ICF KH Qtr.	366	52	11	4	7	0	0	0	0
WHC Mo.	411	205	60	68	7	0	0	0	0
WHC Qtr.	1288	183	29	8	1	0	0	0	0

Dose Interval - mrem

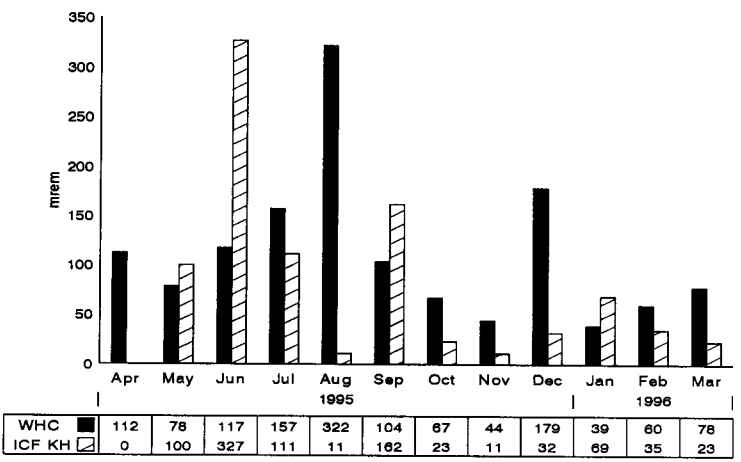
Table 3-2-1. Highest Monthly and Quarterly Frequency Whole Body Dose Employees (Includes internal dose)

Craft	Whole Body (mrem)	Organization Code	Craft	Whole Body (mrem)	Organization Code
Material Handler	501	5B201	Repair/Construction	224	52170
Electrician	477	5B203	Plant/Utility Operator	221	
Material Handler	434	5B201	Plant/Utility Operator	213	
Material Handler	382	5B201	Plant/Utility Operator	208	
Electrician	328	5B203	Health Physics Tech.	205	
Electrician	317	5B203	Laborer	204	
Plant/Utility Operator	293	16D10	Security Guard	199	
Plant/Utility Operator	276	2A431	Misc. Service	198	
Repair/Construction	248	52170	Plant/Utility Operator	197	
Plant/Utility Operator	231	15900	Plant/Utility Operator	197	

3.2.3 High Neutron Dose

Figure 3-2-4 provides a 12-month rolling window of the highest monthly neutron doses received onsite. The highest neutron doses are typically recorded for employees at PFP.

Figure 3-2-4. Highest Neutron Dose



3.3 INTERNAL DOSIMETRY

Radiological Control is responsible for internal dosimetry emergency response following radiological events and for providing an internal dosimetry advisor to interface between: WHC, BCSR, and ICF KH workers, DOE, PNL Internal Dosimetry, WHC Dosimetry, HEHF, Radiological Control management and staff, and WHC Communications following events or positive routine bioassay examinations.

3.3.1 Internal Depositions

Beginning in CY 1993, the DOE Radiological Control Manual required the dose from internal depositions be calculated as the 50-year committed effective dose equivalent (CEDE), and DOE Order 5000.3B established reporting criteria for internal depositions as $\geq$100 mrem CEDE.

3.3.2 Internal Dose Incident Follow-Up

There were three instances of potential loss of contamination control during the calendar quarter involving three workers where internal dosimetry follow-up was performed. No intakes of contamination were detected.

- On 1/31/96 a follow-up whole-body count was performed when a worker received a sliver in the hand from an auger basket piece which was contaminated with Cs-137 and Sr-90 from Tank Farm activities. The follow-up whole-body count showed no indication of an intake.

- On 2/8/96 follow-up whole-body counting was performed when unanticipated low-level beta-gamma contamination was detected on concrete drums. Follow-up whole-body counts showed no indication of an intake.

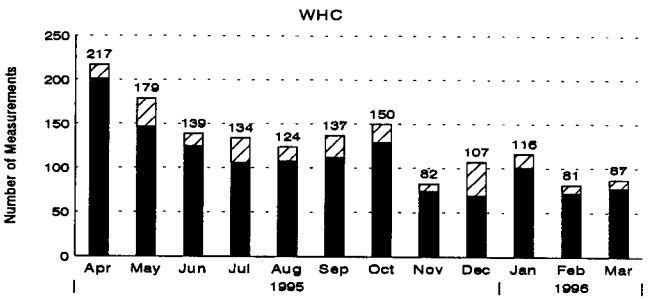
- On 2/14/96 a worker at the 222-S laboratory was contaminated on the face while working with K-Basin sludge. Follow-up whole-body counts showed no indication of an intake.

3.3.3 Direct (*in vivo*) and Indirect (*in vitro*) Measurement

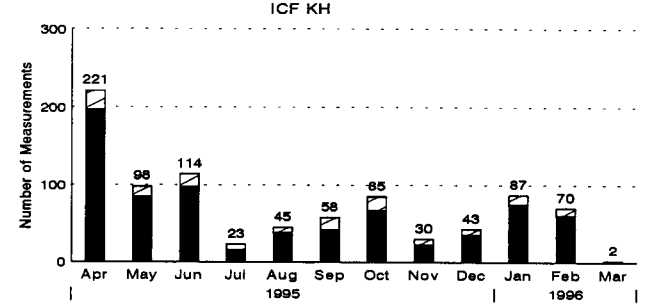
The statistics for total number of urine samples is based on the total number sampled. *In vitro* measurement statistics are presented in Figure 3-3-1 for CY 1995. Statistics are also included for invalid samples:

- No sample - Workers did not provide a sample for a delivered container
- Lost containers - Workers did not return the containers to the analytical laboratory, or as in the first quarter, the containers were deficient
- Insufficient volumes - Workers did not provide an acceptable amount of urine for analysis
- Lost in laboratory - The analytical laboratory lost the worker's sample during the processing.

Figure 3-3-1. Indirect (*In Vitro*) Measurements



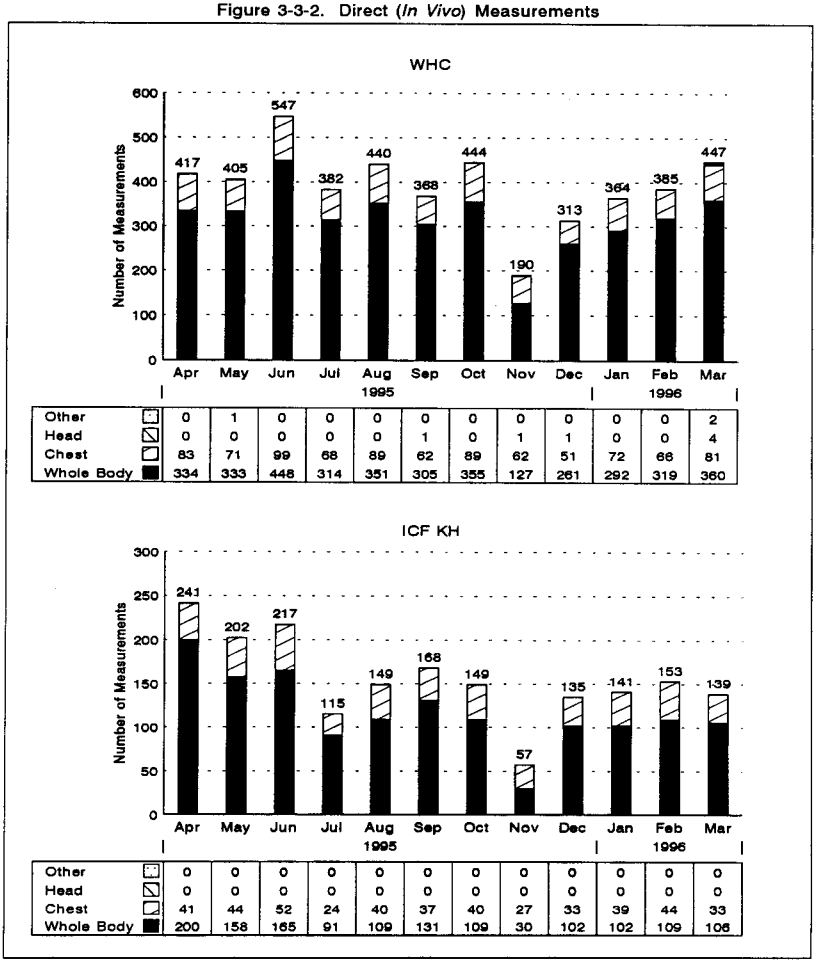
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Invalid Samples	16	32	14	28	16	25	21	8	38	15	9	10
Valid Sample	201	147	125	106	108	112	129	74	69	101	72	77
Lost in Lab	0	4	1	0	1	6	3	3	20	4	1	3
Insuff. Vol.	3	5	1	9	6	2	1	1	5	1	3	4
Lost Container	11	15	9	15	6	14	14	2	7	7	4	0
No Sample	2	8	3	4	3	3	3	2	6	3	1	3



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Invalid Samples	24	13	16	7	6	16	18	7	7	12	9	2
Valid Sample	197	85	98	16	39	42	67	23	36	75	61	0
Lost in Lab	5	2	2	1	0	7	1	2	5	0	2	2
Insuff. Vol.	3	1	4	2	1	2	1	0	0	3	3	0
Lost Container	12	6	6	1	4	5	14	4	0	8	2	0
No Sample	4	4	4	3	1	2	2	1	2	1	2	0

In vivo measurements are accumulated by measurement type: Whole body, chest (lung), and head. All other types of measurements performed (e.g., wound, thyroid) are contained in the "Other" category. The "no-show" category contains the number of chest measurements in which scheduled workers did not report to the PNNL *In Vivo* Radioassay and Research Facility (Figure 3-3-2).

Figure 3-3-2. Direct (*In Vivo*) Measurements



3.4 SKIN AND CLOTHING CONTAMINATIONS

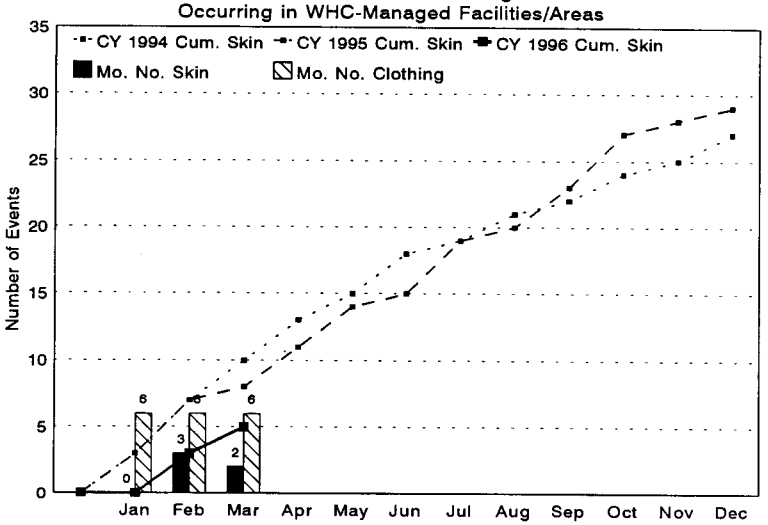
Skin contaminations are of little consequence to employee health and safety, unless they result in significant radiation dose or internal depositions. Each skin contamination incident, however, does represent the potential for a more serious occurrence.

The numbers of all skin and clothing contaminations, with any detectable readings above background and excluding contaminations resulting from naturally occurring radon, are recorded here.

3.4.1 Cumulative CY 1996 Skin Contaminations and Clothing Contaminations

There were five skin contaminations and 18 clothing contaminations reported during this quarter in all WHC-managed facilities/areas. This represents an improvement in performance compared to the first quarter of CY 1995. Figure 3-4-1 charts cumulative data for the last three years.

Figure 3-4-1. CY 1996 Skin and Clothing contaminations Occurring in WHC-Managed Facilities/Areas



3.4.2 Significant Skin Contaminations.

Significant skin contaminations are defined as a skin contamination resulting in a skin dose greater than or equal to one percent of the DOE dose limit, and are an indicator of the effectiveness of WHC radiation work practices and the efficiency of protective equipment. There have been no significant skin contaminations reported in WHC-managed facilities or areas since the one reported during CY 1988.

3.4.3 Facial Contaminations

Facial contaminations hold the potential for inhalation of radioactive material resulting in an internal deposition. The probable causes of the facial contamination incidents occurring during this quarter is given below. Figure 3-4-2 depicts the number of facial contaminations reported during the last 12 months.

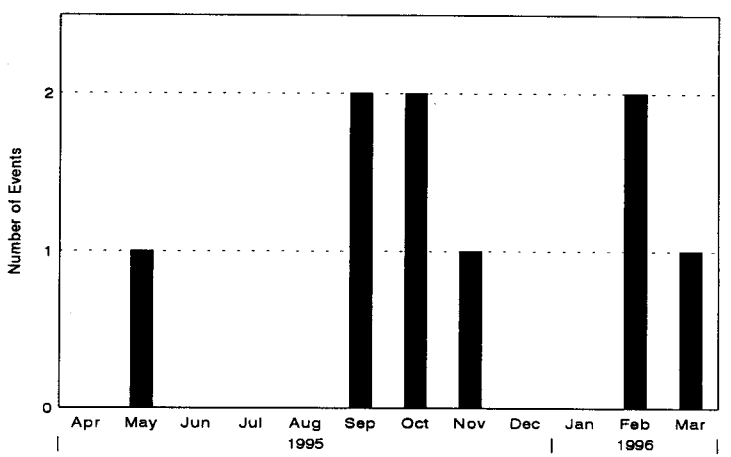
- On 02/14/96, a 222-S scientific technician was working in a fume hood and touched the glasses and skin on the face. The whole body counter detected less than minimum detectable amount of contamination. Probable cause: Touching skin.

- On 02/29/96, a health physics technician discovered high levels of contaminations when raising a level indicator in Tank Farms. Probable cause: Job planning inadequate (pending further investigation).

- On 03/14/96, an operator in K-Basins received contamination to the face while moving an underwater camera for ultrasonic testing. Probable cause: Touching skin.

For further information pertaining to these incidents, refer to Section 3.3.2 and Appendix C-1.

Figure 3-4-2. Facial Contaminations
Received in WHC-Managed Facilities/Areas



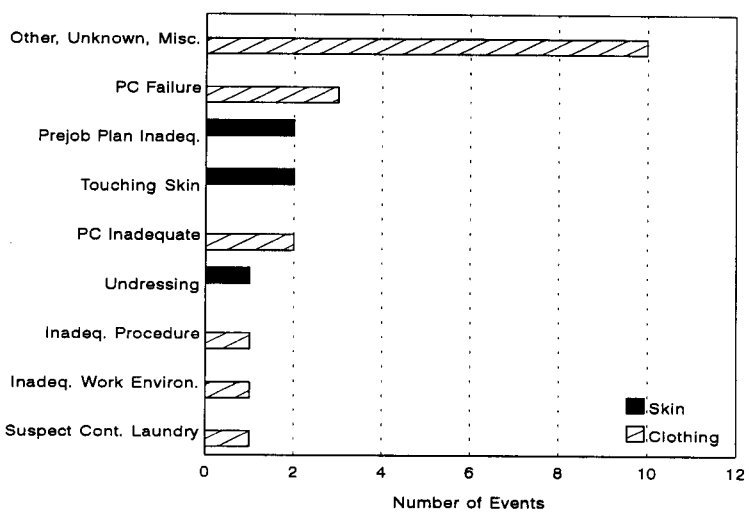
3.4.4 Skin and Clothing Contamination Report Review

The ALARA Program Office, along with Safety Awareness and Performance, and Dosimetry, performed analyses of the skin and clothing contaminations that occurred during the first quarter of CY 1996 in WHC-managed facilities/areas. In an effort to identify possible trends in the root causes of the contaminations, these analyses included those skin and clothing contamination incident reports for contamination in excess of the criteria established in DOE Order 232.1, "Occurrence Reporting and Processing of Operations Information," as well as those that were detected below the reporting criteria.

In most cases it appeared that a thorough and complete investigation has been completed and documented on the contamination reports. In many of the cases, the analyses revealed that contributing factors had been considered, but were unsubstantiated in determining the root cause for the "Unknown" contaminations.

For purposes of this review, the root cause listed in the most current report was utilized. (Figure 3-4-3).

Figure 3-4-3. Personal Contaminations by Cause



3.4.5 Historical Skin Contaminations

Figures 3-4-4 and 3-4-5 graph previous year data for comparison purposes. The yearly totals are for all detectable skin contaminations above background.

Figure 3-4-4. Thirteen-Year Recordable Skin Contamination Comparison
Period Ending 03/31/96

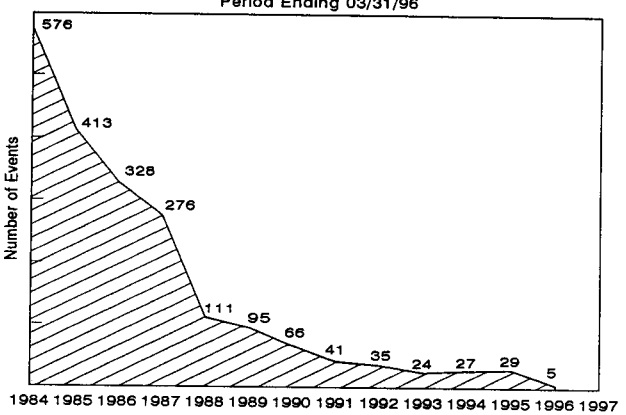
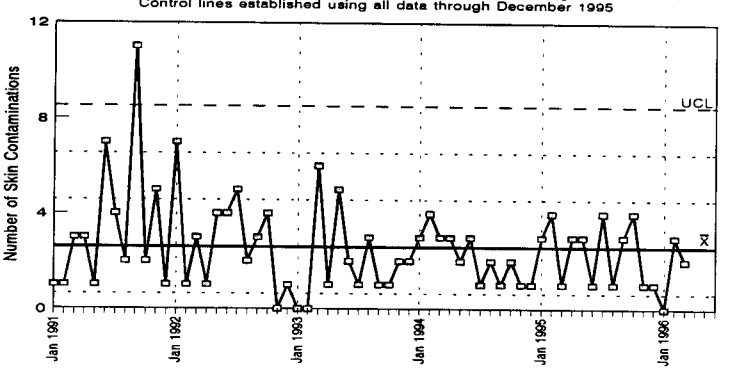


Figure 3-4-5. Skin Contaminations Occurring in WHC-Managed Facilities/Areas
Control lines established using all data through December 1995



3.5 RADIOLOGICAL PROBLEM REPORTS

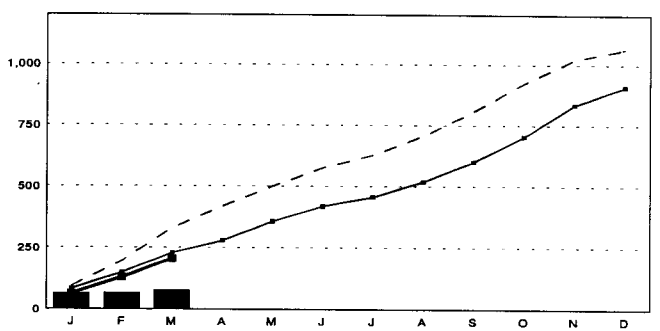
A Radiological Problem Report (RPR) is issued to responsible managers as a method to communicate problems needing correction, monitoring or tracking. Tracking the number of issued reports can provide an indication of both the number of problems needing attention and the adequacy of documentation of these problems by Radiological Control. Tracking the number of open reports provides an indication of the responsiveness of line management in resolving problems of a radiological nature. Tracking the length of time needed to close an RPR is an indicator of the cooperative efforts expended by Radiological Control personnel and the line management with whom they deal in resolving these problems.

The deficiencies noted on RPRs are coded by type, cause, and severity. This information allows extraction of the data for analysis of the types of deficiencies that are occurring, the causes of those deficiencies, and the length of time necessary to accomplish resolution.

3.5.1 RPRs Issued

A monthly average of 76 RPRs was issued during the first quarter of CY 1995 for a total issuance of 228 RPRs. The monthly average for the same quarter in CY 1996 was 76; a total of 227 for the quarter (Figure 3-5-1).

Figure 3-5-1. Cumulative RPR Reports Issued



	J	F	M	A	M	J	J	A	S	O	N	D
CY 1994 Cum.	94	195	329	419	500	576	628	707	809	925	1,020	1,063
CY 1995 Cum.	83	149	228	278	357	419	457	519	601	705	836	910
CY 1996 Cum.	64	129	205									
CY 1996 Month	64	65	76									

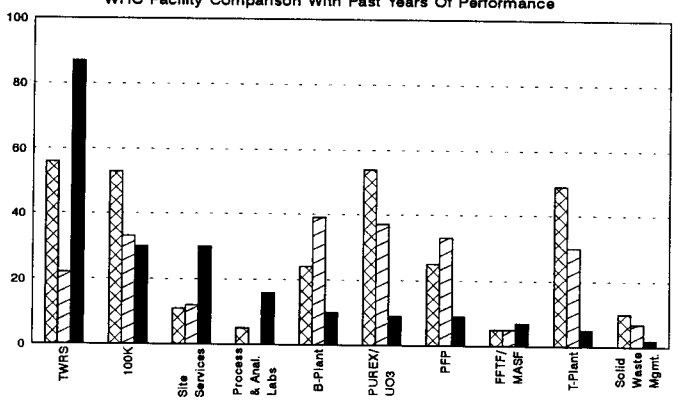
The total number of RPRs written during the first quarter of 1996 was 205, essentially the same number written during the first quarter of 1995. One reason for this is continued high workers activity indicated by an increase in the number of Access Control Entry System (ACES) entries (15,863 monthly average in 1995 versus 21,394 monthly average in 1996).

3.5.1.1 Factors Influencing the Number of RPRs Written

The general stability in numbers of RPRs written from 1995 to 1996 reflects the increased production in WHC-managed facilities even though WHC has down-sized. Refer to Figure 3-5-2.

The increase in awareness of ALARA principles and their application accounts in part for the relative decrease in radiological deficiencies. Cooperative efforts between Radiological Control and its customers have brought more attention to ALARA as a continual approach to hazard management and safe job performance. The ALARA personnel in work areas and the ALARA involvement with the planning of radiological work has also improved performance.

Figure 3-5-2. Facilities Issued RPRs, 1994-1996
WHC Facility Comparison With Past Years Of Performance



	TWRS	100K	Site Services	Process & Anal. Labs	B-Plant	PUREX/ UO3	PFP	FFTF/ MASF	T-Plant	Solid Waste Mgmt.
CY 1994	56	53	11	5	24	54	25	5	49	10
CY 1995	22	33	12	0	39	37	33	5	30	7
CY 1996	87	30	30	16	10	9	9	7	5	2

3.5.2 RPR Trends

The deficiencies noted by the RPR system are coded by type, cause, and severity. This information allows extraction of the data for analysis of the types of deficiencies that are occurring, the cause and severity of those deficiencies, and the length of time necessary for resolution.

3.5.2.1 RPRs by Priority Planning Grid (PPG). The Hanford Site uses the DOE required PPG system to grade radiological and safety deficiencies. The actionee is responsible for determining the priority and weight of each deficiency requiring formal corrective action. Once this has been determined, assigned values make the evaluation of the urgency of completion more readily understandable and comparable with other corrective action measures. For further information, refer to WHC-CM-1-4, *Corrective Action Management Manual.*

During the first quarter of 1996, of all PPG-graded RPRs, 70% have been weighted at under 6; about 30% were weighted at >6 and <11.

Of the RPRs that have not been assigned PPG values, most were issued for information only or were closed within 30 days, as a continuing cooperative effort on the part of Radiological Control and it's customers, to maintain the site ALARA. Many of these RPRS, issued for information purposes, are record issues already being tracked by the facilities as occurrence reports, and therefore RPRs were not evaluated for PPG with the responsible tracking being done via the occurrence report system.

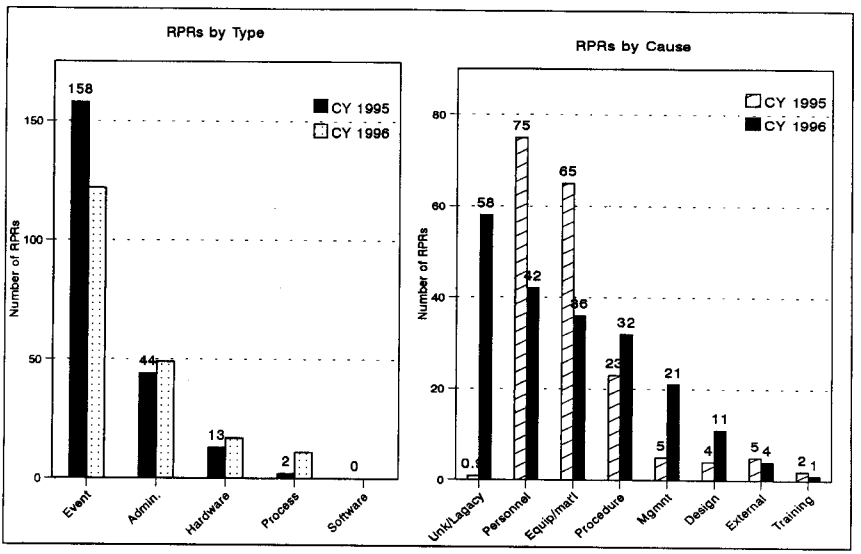
3.5.2.2 RPRs by Type and Cause. A total of 205 RPRs had been written on radiological deficiencies during the first quarter of 1996, and of those written, 122 were reported for various radiation contamination situations (EV - Event), which is 60% of the total written. Of those issued for Events, 58 (48%) were listed as unknown causes (the absence of directly discernable evidence) for the source of the radiological contamination. Emphasis has been stressed in an attempt to improve the discernment of causes for an event in order to improve trending analysis. Of all RPRs issued, equipment and material-related causes were cited as the leading statistical attributes for this first quarter's cycle.

Of all RPRs written, other than contamination, personnel issues were the primary causes: A total of 42 or 20%. Management issues with 21 (10%) was second. It is easier to work with the personnel issues since they are very specific and can be detailed. Within the framework of the "Management" categories, those issues with unknown causes are being trended by area/location and watched for recurrence. Natural phenomena can only be controlled to a certain extent - tumbleweeds gathered and/or mulched, areas blocked from animal intrusion. Those unknown causes, as they recur, need to be revisited and trended closely. The Radiological Control organization monitors causal factors by more appropriately designating causes to deficiencies as much as is discernable. The trend toward an increase of equipment and personnel identified causes is a reflection of the increased awareness of personal accountability in the workplace.

Of the RPRs listed with PPGs greater than or equal to 6 and less than 11, the majority are type coded as Administrative (57%) and then Event (43%). The leading cause in this area are listed as Management Problem (86%) with Equipment/Material related deficiencies listed as a cause for 14% of the issues within this PPG range. There were no items listed in the Legacy/Source unknown category for this PPG range. There were no RPR with PPG values greater than 11. The percentages above may be misleading as there were only a total of 7 RPRs with PPG >6 and <11.

Radiological Problem Reports are written to document radiological problems. The majority of them therefore list "radiological events" as primary types. Causal factors do need to be identified and investigated, especially those that recur. Personnel errors, administrative issues, procedural and training issues are observed and monitored, and the correlation of causal factors must be done at each field office, recurrences taken into account, and trends established. Taken together, equipment and personnel issues account for the majority of all coded RPRs for this quarter. Radiological Control and the actionees have shown improvement in specifying causes and attempting to resolve them at low-level status(Figure 3-5-3).

Figure 3-5-3. RPRs by Type/Cause



3.5.2.3 Contamination Events. The total number of contamination events reported for first quarter decreased from the previous 1995 first quarter cycle of 158 to 122 (about 23%). The shift in facility-related incidents is consistent with the reported activities in the various facilities. The primary causes listed for all events include Equipment/Material and Personnel Errors as the leading issues. The undetermined direct and root cause factors the third leading variable (Figure 3-5-3).

3.6 DOSIMETRY

The WHC Dosimetry organization administers the dosimetry system that measures and records various types of external and internal radiation exposures occurring in WHC-managed facilities. All record and supplemental dosimeters for WHC, BCSR, ICF KH, and DOE, all of their visitors, subcontractors, vendors and tour participants are issued and processed by the Dosimetry Group. These dosimeter data are recorded and reported as required.

The Dosimetry organization is responsible for tracking and monitoring declared pregnant workers, conducting monthly dosimeter audits and status reports, and in vivo and in vitro scheduling and reporting. To ensure exposures are kept ALARA, Dosimetry performs daily exposure checks and audits, provides the ALARA Program Office with daily input on exposures, and provides an ongoing history for tracking employees from date of hire to date of termination. All deadlines were met for the March 1996 quarterly dosimeter exchange. Deadlines are becoming more difficult to meet, due to multiple dosimetry jobs, reduced staff, and an increase of work load.

At the end of March, Dosimetry was monitoring seven pregnant workers on a monthly exchange. No exposure was recorded during the first quarter of 1996.

Work restrictions were issued for nonreturn of 154 dosimeters and 19 finger rings during the 1st quarter. These restrictions are placed directly on ACES and letters are mailed to the employee, and their manager, informing them of the restriction. The work restriction is lifted when the dosimeter, ring, or a dose estimate is received by Dosimetry.

At the end of the first quarter WHC was monitoring the following employees/sub-contractors: 631 monthly standard dosimeters, 251 monthly combination dosimeters, 1,386 quarterly standard dosimeters, 472 quarterly combination dosimeters, and 3,716 annual dosimeters. During this period, dosimetry had 987 requests for changes to the frequency, and terminated 731 dosimetry records.

Supplemental dosimetry jobs are requiring use of multiple dosimeters used on various body locations. There are currently three of these special jobs going on in the 200 Areas. Multi-dosimetry jobs have increased the work load in the Dosimetry Group. Special dosimetry packages must be prepared, processed, analyzed, and dose adjustments made when necessary. During the first quarter of 1996, there were 261 special dosimetry "multi-paks" processed by Dosimetry.

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CY 1996 WHC SITE-WIDE ALARA GOALS

No.	Goal	ECD
1.	Participate in and support the CY 1996 Health and Safety EXPO scheduled for April 10 and 11, 1996. The WHC ALARA Council will assist in staffing an ALARA Activities booth designed to increase Hanford employees awareness of ALARA principles and practices. Champion: ALARA Council Analysis of Performance: The WHC ALARA Program Office (APO) has assisted in contacting and scheduling over 100 vendors and exhibitors for Expo '96. The APO has scheduled a topical and practical ALARA booth to demonstrate the successes of ALARA and share ALARA principles and practices with Hanford employees.	06/30/96
2.	The ALARA/CCIP Program Office will provide quarterly ALARA training/demonstrations, utilizing the hands-on instruction approach, as applicable, for ALARA Council and ALARA Committee members. This training will focus on radiological and non-radiological ALARA issues in an effort to expand the awareness of WHC employees to ALARA Principles. Champion: WHC ALARA/CCIP Program Office Analysis of Performance: During the first quarter of CY 1996, there were 90 Hanford employees trained in the ALARA Management Worksheet process (course number 020910) and 66 Hanford employees trained Post ALARA Review documentation process (course number 020915). These training courses are provided to facilities at no direct cost for instruction.	12/31/96
3.	Update and revise the WHC ALARA/CCIP Tools Listing to provide a source of information that can be used to assist personnel in the planning, training and execution of radiological work using the principles of ALARA. This revision will include detailed information on the use and procurement of engineered controls, conduct of pre-job briefings and post-job ALARA reviews. Champion: WHC ALARA/CCIP Program Office Analysis of Performance: Currently, a "draft" revision of the WHC ALARA/CCIP Tools Listing is being compiled for reissuance in June 1996.	06/30/96

No.	Goal	ECD
4.	Maintain the CY 1996 annual cumulative radiological exposure for radiation workers (WHC and ICF KH monitored with a Hanford standard dosimeter) at WHC-managed facilities/operations at less than 300 person-rem. Champions: Facility ALARA Committees Analysis of Performance: Through February 29, 1996, the annual cumulative radiological exposure for radiation worker, that have had their dosimeters processed, is 15.373 rem. ICF KH accounted for 3.220 rem of this figure. BCSR did not have any dosimeters processed therefore they account for none of this figure. For tracking and trending purposes the 15.373 rem does not include internal dose calculations. * Note - This goal is a compilation of the facility specific ALARA goals, and will be updated quarterly, as necessary, based on changes in the technical basis (i.e., redefined work scope, clarification of ICF KH personnel exposure, etc.) used in developing this goal.	12/31/96
5.	Promote the reduction/downgrading of radiological areas at WHC-managed facilities/operations by a minimum of 3.5 million square feet, in support of the Contamination Control Improvement Project. Champions: Facility ALARA Committees Analysis of Performance: Due to reorganization, current figures are not available at this time. This goal will monitor the reduction of all radiological areas.	12/31/96
6.	Continue to demonstrate a reduction in the unnecessary use of respiratory protection by documenting the amount of one time or routine activities where the use of respirators was or would have been routinely employed in the past but, due to application of the principles listed in HSRCM Article 316, other engineering controls were utilized to eliminate/reduce the use of respiratory protection for that activity. Champions: Facility ALARA Committees Analysis of Performance: The majority of the facilities are tracking this goal through their ALARA Goals and will report their success during the first quarter of CY 1996 status report.	12/31/96
7.	Track and trend unplanned exposures that exceed the Administrative Control Levels as established in the Hanford Site Radiological Control Manual. Provide a synopsis of the corrective actions assigned to prevent recurrence of similar events. Champion: WHC ALARA/CCIP Program Office Analysis of Performance: Through February 29, 1996, there have not been any unplanned exposures that exceed the Administrative Control Levels of the HSRCM-1.	12/31/96

No.	Goal	ECD
8.	Maintain the number of skin and clothing contamination events at 0 significant ($\geq$ 1 percent of DOE dose limit), and not more than 69 cumulative contamination events occurring during CY 1996 at WHC-managed facilities or operations. Revised 03/25/96: Maintain the number of skin and clothing contamination events at 0 significant ($\geq$ 1 percent of DOE dose limit), and not more than **66** cumulative contamination events occurring during CY 1996 at WHC-managed facilities or operations. Champions: Facility ALARA Committees Analysis of Performance: * Note - This goal was created utilizing the information provided by the facility specific ALARA goals and will be adjusted according to changes in workscope at the facility level.	12/31/96
9.	Maintain new confirmed unplanned internal depositions that result in a committed effective dose equivalent $\geq$ 100 mrem at $\leq$ 2 events during CY 1996. Champions: Facility ALARA Committees Analysis of Performance: Through February 29, 1996, there were no internal depositions reported that exceed the criterion of this goal.	12/31/96
10.	Track and trend the instances of confirmed mission-related airborne radioactive material concentrations greater than 10 percent of a DAC in occupied areas not controlled and posted as Airborne Radioactivity Areas which result in personnel being assigned a committed effective dose equivalent < 100 mrem. Champion: WHC ALARA/CCIP Program Office Analysis of Performance: Through February 29, 1996, there were no mission-related airborne radioactive material concentrations reported that exceed the criterion of this goal.	12/31/96
11.	Continue to decrease the number of uncontrolled/unwanted (i.e., non-legacy contamination) releases of radioactive material, solid or liquid, into the work environment reportable under DOE 232.1. This goal will be accomplished if the number of releases described above, in any six month award fee period are less than those that occurred during the last 6 months of FY 1995. Champions: Facility ALARA Committees Analysis of Performance: Several facilities are tracking this goal in their facility-specific ALARA goals for CY 1996. * Note - Legacy contamination is defined in DOE 232.1 as radiological or hazardous material contamination attributed to past practices.	12/31/96

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APPENDIX B-1

RESOURCES

Listed below are a variety of resources available to assist in the injury/illness prevention effort.

WHC Field Safety Offices - Staff members are available to assist the line manager and accident investigators with occupational injury/illness investigations. The staff members will also assist with hazard evaluations, review of work practices, and safety meetings. To request assistance, contact one of the following field safety points-of-contact.

- Transition Projects Safety - 372-0399
- Site Safety Programs - 372-2991
- Tank Waste Remediation Systems Safety - 373-6976
- Spent Nuclear Fuel Safety - 373-3464
- Safety Operations Support - 372-2598

WHC Industrial Safety and Fire Protection (IS&FP) - This organization can provide the following:

- **Occupational Injury/Illness Investigations** - Accident Investigators are available to assist with investigation and OSHA recordability determination. To request assistance, contact 376-9146, 376-2354, or 376-9003.

- **Occupational Injury/Illness Information** - To receive more information on the following, contact 376-8872, 376-5325, or 376-9141.

  - **WHC/BCSR Occupational Injury/Illness Report** - A report that is provided weekly on Soft Reporting which is sorted by organization code or facility.
  - **Daily Report of WHC/BCSR Occupational Injuries/Illnesses** via cc:mail.
  - **President's Accident Prevention Committee (PAPC)** - Information that is provided to the PAPC.

- **Safety Meeting Materials** - Many resources are available through the Safety Resource Center to assist individuals with conducting effective safety meetings. Resources available include videos, literature, safety meeting guest speakers, and assistance with individual safety programs. For information on these resources, contact the Safety Resource Center, 376-9059 or 376-8990.

- **Safety Awareness Programs** - For information regarding company wide health and safety awareness programs that have been implemented for prevention of occupational injuries, illnesses and accidents, contact 376-9059 or 376-8990.

ALARA - ALARA support is provided for goal development, training and awareness activities. For more information, contact 376-9035.

Fall Protection Program Training - This training is mandated for employees who work at elevated work location where the potential injury due to falls is present. This training covers regulatory requirements, proper use, testing and maintenance of hardware and safety equipment. This training meets OSHA and WHC requirements for fall protection training certification of at-risk employees and their managers/supervisors. For additional information, call 376-0687 or 376-0913.

Behavioral-Based Safety Training Course is a behavior based approach to safety. The course allows participants to identify barriers to safety, discuss the three elements of a Total Safety Culture, and learn how they can implement seven fundamental principles of the safety process. The course is currently being offered once each month. This training supports, and is a critical implementation and operation factor for, the Voluntary Protection Program (VPP).

- Currently to schedule training, send your request by cc:mail to the Training Registration mailbox. In the cc:mail message, include employee name, payroll #, charge code, name of class, and course code number 020107. Also, if there is a date the employee is not available, include this information in order to avoid rescheduling of the class. Refer to Hanford Training Center (376-6736) if they have questions on how to use the cc:mailbox. Planned enhancements will allow direct scheduling of the employees via the HLAN and PeopleSoft.

- Additional support training for implementation of behavioral-based safety processes is available to Accident Preventions Councils, Safety Teams, or Safety Work Groups. To schedule a class, contact Health and Safety Training (372-3910).

Confined Space Entry Program Training - This course covers all life critical concerns for employees required to enter or work in confined spaces. The training covers the regulatory requirements, and proper use and testing of the appropriate safety harness and equipment required for confined space entry. This training is required for all entrants, attendants, and oversight personnel that are involved with a confined space entry. For more information contact 372-3110 or 376-0913.

Safety Observer Training - This course is designed to assist in the training of employees in the recognition of the basic causes of accidents in the work place (unsafe acts and unsafe conditions). Program provides 8 to 10 hours of OSHA initial training, hazard recognition training, refresher Behavior Based Safety Training and various issue specific follow up training modules on request. For information, contact 372-3910, or 376-0913.

Occupational Safety and Health Program Training - This course is the four day presentation of the OSHA Code of Federal Regulations (CFR) 1910. The training provides an overview and understanding of the applicable Federal Regulations for the operations of the Hanford Site. The training instructs the student in the methods of using the CFR's as a resource, and recognition of hazards within the work place as identified by OSHA. For additional information call 376-0913.

Lock and Tag Program Training (initial and refresher) - This training is required for all employees that are classified as "authorized workers" within the site definition. This includes all employees that administer, verify, install or remove locks and tags in support of the established site procedure. The training addresses regulatory requirements, proper procedures and documentation requirements for the sitewide program. Additional information regarding the training and prerequisites can be obtained by calling 376-0830 or 376-0913.

APPENDIX B-1 (Continued)

Managers Safety Training - The course is designed to provide an initial four hour block of classroom training, followed with several one or two hour modules to be completed through-out the year as part of the managers Safety Improvement Plan. This allows the individual manager to schedule the training modules as needed or as available for optimum flexibility. For additional information call 372-3200 or 376-0913.

Root Cause Analysis - Attendees of this course develop an understanding of several analysis methods for use in accident investigations. For information on this course, contact DOE-RL Quality Training and Resource Center (QTRC) on 376-7117.

Back Up - Back Health Series: - Four presentations are 60 minutes and are designed to improve. To schedule a particular presentation, managers may cc:mail *HEHF Worksite Health, or call 376-0655.

- **BackUp I - Back to Basics (Prerequisite class)** - Participants are taught back health essentials.
- **BackUp II - All the Right Moves** - Safe lifting techniques and proper body mechanics are discussed.
- **Back Up III - Adjusting Your Hardware, Maintaining Your Software** - This ergonomics program includes practical information on workstation adjustments and exercises for comfort and health.
- **BackUp IV - Backtivity** - Prevent and/or reduce back pain with strengthening and stretching exercises.

Your Healthy Back - This is a four hour course that is offered by QTRC. This class also provides employees with information on what are the common reasons for back injury, and ways to prevent back injuries. A portion of this program is devoted to a stretching and strengthening session. For more information, contact 376-7117.

Supervising to Prevent Back Injuries - This is a five hour course that provides supervisors with information pertaining to the prevention of back injuries in the work place. For more information, contact QTRC (376-7117).

Wellness Seminars - Wellness seminars are available by HEHF Occupational Health professionals for delivery at the Hanford site on a request basis to groups of 12 or more employees. These presentations have been designed to promote employee health and safety, increase productivity and well-being, as well as reduce absenteeism.

Listed are the titles of the seminars offered by HEHF Worksite Health. To receive information or schedule a particular seminar, managers may cc:Mail HEHF Worksite Health mailbox, or call HEHF Worksite Health at 376-0655. Please schedule your presentations at least three weeks in advance.

APPENDIX B-1 (Continued)

- Adapting to Stress video
- Battling Bug Bites (April - Sept.)
- Coping with Allergies video
- Don't Diet, Think Light video
- Heat Stress
- Humor Risk and Change video
- Laughter in the Workplace video
- Lighten up video
- No More Headaches video
- Self Care-Cold & Flu
- Sleep-Good Morning Sleep Education
- Smoking Cessation (offered twice a year)
- Working Mom's Survival Guide video

Below you will find the titles of the seminars offered by HEHF Behavioral Health Services. To receive information or schedule a particular seminar, call 376-1282.

- Achieving a Balanced Lifestyle
- Anger Management
- Be Your Best You
- Coping with Change
- I Have This Friend
- Just Relax
- Saving for Stress
- Talking to Yourself Can Drive You Sane

Exercise/Fitness - Walklife - Become a member of the Hanford Site walking club. Membership includes a bimonthly newsletter and incentives.

Appendix B-2
CY 1996 Recordable Government Vehicle Accidents

Date	$ Amount	Area	Organization Code	Description of Accident
01/04/65	$ 1,244	Route 4 So. and Spengler Road, Richland	8H600	Driver was northbound on Rt. 4 So. when driver of private vehicle failed to yield the right of way after stopping at Stop Sign. The driver of the government vehicle swerved to avoid the collision, but was unable to avoid it and was struck in the right rear side. The private vehicle sustained damage to the front of vehicle. Neither driver was injured.
01/04/96	$ 1,529	LERF Basin #43 200 East Area	77370	Employee was hurrying to complete pumping water off the top of LERF Basin #43. He jumped into the van and backed into a light pole damaging the left rear of the vehicle. The driver was not injured.
01/06/96	$ 2,289	271-A Farm off Canton Ave., 200 West Area	77170	The vehicle was left running and unattended during cold weather while the employee was taking tank readings. It was inadvertently left in gear and the vehicle crept forward until the driver's side mirror met the corner of a conex building causing damage to the left side of the vehicle. There were no injuries.
03/05/96	$ 2,482.	Burial Ground 218-W-5, 200W Area	87200	While driving DOE personnel on a tour of the Burial Grounds the employee backed into a light pole damaging the right rear of the vehicle. There were no injuries.

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SKIN CONTAMINATIONS
OCCURRING IN WHC-MANAGED FACILITIES DURING CY 1996

Report-able	Report # Date	Org. Code	Facility & Building	Craft	Maximum Activity		First Detected	Body Location	Defined Cause	Comments
T	SCR-96-005 960214	75764	ANAL LABS 222S	TECH-SCIENC	60000	DPM BG	PCM-1B	FACE	TOUCHING SKIN	WORKER CHANGED GLASSES IN CONT AREA WHILE DOING HOOD WORK
T	SCR-96-008 960222	8R610	PUREX 202A	FIREMAN	900	DPM A	HPT	HAND	UNDRESSING	MAY HAVE RECIEVED CONT WHEN REMOVING SURGEON'S GLOVES
F	SCR-96-009 960229	333B4	TANK FARMS 241-C	HPT	3500	DPM BG	SELF	FACE	PRE-JOB PLANNING INADEQUATE	DISCOVERED UNEXPECTED HIGH LEVELS OF CONT WHEN REMOVING MANUAL TAPE
F	SCR-96-011 960308	17530	PUREX 202A	PIPEFITTER	1000	DPM BG	HPT	HAND	PRE-JOB PLANNING INADEQUATE	DOING WORK ON CONT SYSTEM W/O RWP AND PPE OR HPT SUPPORT
T	SCR-96-012 950314	2A431	K BASINS 105KE	RX OPERATOR	15000	DPM BG	HPT	FACE	TOUCHING SKIN	TOUCHED SKIN AFTER MOVING UNDERWATER CAMERA IN SCA

WHC-SP-0564-41

CLOTHING CONTAMINATIONS
OCCURRING IN WHC-MANAGED FACILITIES - CY 1996

Report-able	Report # Date	Org. Code	Facility & Building	Craft	Maximum Activity		Clothing Contaminated	Defined Cause	Comments
F	PEC-96-002 960105	87421	T PLANT 221-T	NUCL OPER	4000	DPM BG	T SHIRT	OTHER, UNKNOWN, MISC.	POSSIBLE CONT PROTECTIVE CLOTHING
T	PEC-96-007 960105	77140	TANK FARMS 241-AW	NUCL OPER	30000	DPM BG	GLOVE LINERS	INADEQ PROCEDURE/METHOD	CONT ON SEVERAL ITEMS OF CLOTHING AND SKIN AFTER PUMPING PIT
T	PEC-96-001 960105	16A10	B PLANT 225-B	PIPEFITTER	800000	DPM BG	SHOE	OTHER, UNKNOWN, MISC.	WALKED PAST CONT LAUNDRY STORAGE, LAUNDRY BAG CONT HAD SAME ISOTOPE
T	PEC-96-003 960115	2A310	K BASINS 105KW	ENGINEER	6000	BG BG	SHOE	OTHER, UNKNOWN, MISC.	SURVEYS OF AREAS WEHRE WORKER HAD BEEN REVEALED NO CONT
T	PEC-96-004 960123	75700	ANAL LABS 222-S	SCIENTIST	20000	DPM BG	SHOE	OTHER, UNKNOWN, MISC.	NO SOURCE OF CONT FOUND.
T	PEC-96-005 960131	16D10	B PLANT 271B	NUCL OPER	60000	DPM BG	SHOE	INADEQ WORK ENVIRONMENT	LIKELY CONT WAS RESULT OF BREACH IN A WASTE REMOVAL BAG
T	PEC-96-006 960207	77140	TANK FARMS M0820	NUCL OPER	22000	DPM BG	JACKET	PC NOT ADEQUATE	HOSE CONNECTOR ON PRESSURE SPRAY WAND LEAKED AND SPRAYED OPERATOR
T	PEC-96-012 960209	15900	PFP 234-5Z	NUCL OPER	2450	DPM A	SOCKS	PC FAILURE	PC FAILURE OCCURRED DURING DISMANTLING OF A CONTAINMENT
T	PEC-96-013 960213	17510	PUREX 202-A	NUCL OPER	13000	DPM BG	SHOE	OTHER, UNKNOWN, MISC.	SCREENING DOCUMENTS IN PUREX STOR GALLERY, NO KNOWN SOURCE OF CONT
F	PEC-96-009 960216	2A440	K BASINS 105KW	RX OPERATOR	1000	DPM BG	SHOE	OTHER, UNKNOWN, MISC	

CLOTHING CONTAMINATIONS
OCCURRING IN WHC-MANAGED FACILITIES - CY 1996

Report-able	Report # Date	Org. Code	Facility & Building	Craft	Maximum Activity		Clothing Contaminated	Defined Cause	Comments
T	PEC-96-011 960226	16A10	B PLANT 225-B	PAINTER	60000	DPM BG	SHOE	OTHER, UNKNOWN, MISC.	NO SOURCE OF CONT IDENTIFIED
T	PEC-96-010 960231	3E120	TANK FARMS 2704-HV	HPT	10000	DPM BG	COAT	OTHER, UNKNOWN, MISC.	HPT ONLY ONE ON CPO FIELD SAMP. CREW TO RECEIVE CONT, UNKNOWN SOURCE
T	PEC-96-014 960306	87490	T PLANT 221-T	RIGGER	20000	DPM BG	PANTS	OTHER, UNKNOWN, MISC.	PANTS CONT WHILE INSPECTING WIRE ROPE
F	PEC-96-015 960307	5A380	TANK FARMS 241-C	LABORER	3000	DPM BG	BOOT	PC FAILURE	PROBABLE CAUSE WAS SPECK FROM PPE
F	PEC-96-016 960319	87421	T PLANT 271T	NUCL OPER	3500	DPM BG	SHORTS	PC FAILURE	SUSPECT CONT FROM PPE
F	PEC-96-017 960322	75130	TANK FARMS 242-S	NUCL OPER	4500	DPM BG	CAP	PC NOT ADEQUATE	SHOULD HAVE HAD COVERING OVER BASEBALL CAP
T	PEC-96-018 960326	33383	TANK FARMS 242-A	HPT	16000	DPM BG	SHIRT	OTHER, UNKNOWN, MISC.	FOUND CONT WHEN EXITING RBA
F	PEC-96-019 960326	87020	T PLANT 2706-T	SUPR-OPER	4000	DPM BG	BOOT	OTHER, UNKNOWN, MISC.	UNKNOWN CAUSE, NO DESCRIPTION

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GLOSSARY

ABBREVIATIONS, ACRONYMS, AND INITIALISMS

ALARA	As Low As Reasonably Achievable
APC	Accident Prevention Council
APM	ALARA Protective Measures
APO	ALARA Program Office
ARA	Airborne Radioactivity Area
AMW	ALARA Management Worksheet
ANSI	American National Standards Institute
ATAMS	ALARA Tracking and Management System
BBST	Behavioral-Based Safety Training
BCS	BCS Richland, Incorporated (60000)
BCSR	BCS Richland, Incorporated
BHI	Bechtel National, Incorporated
BLS	Bureau of Labor Statistics
CA	Contamination Area
CAIRS	Computerized Accident/Incident Reporting System
CAM	Continuous Air Monitor
CAS	Central Alarm System
CCIP	Contamination Control Improvement Project
CEDE	Committed Effective Dose Equivalent
CFO	Administration (Chief Financial Officer) (40000)
CM	Controlled Manual
CSO	Cognizant Secretarial Office
CTD	Cumulative Trauma Disorder
CY	Calendar Year
CYTD	Calendar Year to Date
D&D	Decontamination and Decommissioning
DORITE	Define, Observe, Record, Intervene, Test, Evaluate
DTPA	Diethylenetriaminepentaacetate
DOE	U. S. Department of Energy
DOE-HQ	U. S. Department of Energy - Headquarters
DOE-RL	U. S. Department of Energy - Richland Operations Office
DOP	Disecoctyl Phthalate
DPETS	Daily Personnel Exposure Tracking System
ECD	Estimated Completion Date
ERO	Environmental Restoration Operations
ESQ	Emergency, Safety, and Quality Assurance Department (30000)
EWP	Enhanced Work Plan
FCA	Fixed Contamination Area
FFTF	Fast Flux Test Facility
FMEF	Fuels and Materials Examination Facility
FY	Fiscal Year
FYTD	Fiscal Year to Date
GERT	General Employee Radiological Training
GOCO	Government Owned, Contractor Operated
HAMTC	Hanford Atomic Metal Trades Council
HEHF	Hanford Environmental Health Foundation
HCA	High Contamination Area
HEPA	High Efficiency Particulate Air (filter)
HGET	Hanford General Employee Training
HLAN	Hanford Local Area Network

GLOSSARY (Continued)

HPT	Health Physics Technician
HR	Human Resources (0H000)
HRA	Human Resources and Administration Department
HSRCM	Hanford Site Radiological Control Manual
IAEA	International Atomic Energy Agency
ICF KH	ICF Kaiser Hanford Company (50000)
IH	Industrial Hygienist
IHEL	Industrial Hygiene Equipment Laboratory
INS	Interstate Nuclear Systems
LWC	Lost Workday Case
LWD	Lost Workday
MACTC	MAC Technical Consultants
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheet
NRC	Nuclear Regulatory Commission
ORPS	Occurrence Reporting and Processing System
OSHA	Occupational Safety and Health Administration
PAPC	President's Accident Prevention Council
PAPR	Powered Air Purifying Respriator
PAR	Post ALARA Review
PFP	Plutonium Finishing Plant
PIC	Person In Charge
PNNL	Pacific Northwest National Laboratory
PPE	Personal Protective Equipment
PPG	Priority Planning Grid
PRF	Plutonium Reclamation Facility
PSS	Projects & Site Services (80000)
PUREX	Plutonium-Uranium Extraction (Facility at Hanford Site)
QUEST	Quality, Environmental, Safety Tracking
RA	Radiological Area
REX	Radiological Exposure System
RMA	Radioactive Materials Area
RPR	Radiological Problem Report
RWD	Restricted Workday
RWP	Radiation Work Permit
SCA	Surface Contamination Area
SHARE	Search Hanford Accessible Reports Electronically
SIP	Safety Improvement Plan
SISE	Safety Improvement Self Evaluation
SNF	Spent Nuclear Fuel Project (20000)
SOP	Standard Operating Procedure
SRID	Standards, Requirements Identification Document
START	Supervisory Training in Accident Reduction Techniques
SWD	Solid Waste Disposal (87000)
SWP	Special Work Permit (clothing)
TLD	Thermoluminescent Dosimeter
TRC	Total Recordable Cases
TRP	Transition Projects Department (10000)
TWR	Tank Waste Remediation Systems Department (70000)

GLOSSARY (Continued)

TWRS	Tank Waste Remediation System
VPP	Voluntary Protection Program
VPPPA	Voluntary Protection Program Participants' Association
WEC	Westinghouse Electric Corporation
WESF	Waste Encapsulation and Storage Facility
WHC	Westinghouse Hanford Company (Richland, WA)
WID	Waste Isolation Division (Carlsbad, NM)
WINCO	Westinghouse Idaho Nuclear Company (Idaho Falls, ID)
WRAM	WHC Radiation Area Monitoring
WSRC	Westinghouse Savannah River Company (Aiken, SC)

DEFINITIONS OF TERMS

Days Away From Work (LWD). Unable to be present in the work environment during the normal work shift as a result of a job-related injury/illness.

First Aid. A nonrecordable occupational injury/illness involving one-time treatment and/or subsequent observation, not ordinarily requiring medical care, even though treatment may be provided by a physician or medically trained person.

Insufficient Volumes. Workers did not provide an acceptable amount of urine for the requested analysis.

Lost Containers. Workers did not return the urine sample containers to the analytical laboratory, or the containers were deficient.

Lost in Laboratory. The analytical laboratory lost the urine sample during the processing.

Lost Workday. A recordable case where the employee cannot perform any or all of normal job duties. Lost workdays include both days away from work and/or days with restricted work activity as defined under "Restricted Workday."

Motor Vehicle Incidence Rate. Number of recordable government motor vehicle accidents x 1,000,000, divided by actual vehicle miles driven.

Motor Vehicle Dollar-Loss Rate. Government motor vehicle dollar loss x 1,000, divided by actual vehicle miles driven.

No Sample. Workers did not provide a urine sample for a delivered container.

No Show. Worker did not appear for a scheduled medical or test appointment.

Occupational Injury/Illness Incidence Rate. Incidence rates represent the number of occupational injuries/illnesses per 100 full-time workers and were calculated as: (N/EH) X 200,000 where: N = number of injuries/illnesses; EH = total hours worked by all employees during the reporting period; 200,000 = base for 100 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

Organization Code. The organization to which the employee was officially reporting at the time of the report.

Property Loss Rate. Actual government property damage (fire or nonfire) dollar loss x 10,000, divided by property dollar valuation.

Recordable Case. An occupational injury/illness resulting in one or more of the following: a fatality, lost workdays, loss of consciousness, restricted work or motion, bone fracture, medical treatment beyond first-aid, transfer to another job, termination of employment, or any illness diagnosed by a physician as work related.

Restricted Workday. Physically or mentally unable to perform all or any part of normal work assignment during all of any part of the normal workday or shift. These are cases where the employee was: 1) Assigned another job on a temporary basis; 2) Worked at a permanent job less than full time: or 3) Worked at permanently assigned job but could not perform all duties normally connected with it.

GLOSSARY (Continued)

Severity Rate. Severity rates represent the number of days lost or restricted per 100 full-time workers and were calculated as: (N/EH) X 200,000 where N = number of days lost or restricted; EH = Total hours worked by all employees during the reporting period; 200,000 = base for 100 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

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