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Work Site Risk Assessment: A Survey of Department of Energy Nurses

by

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Abstract

Work Site Risk Assessment: A Survey of Department of Energy Nurses

by: Connie Grondona

The purpose of this study was to ascertain, in the view of the Department of Energy (DOE) and Nuclear Industry Occupational Health Nurses (OHNs), the most serious and most common risks at their organizations as perceived by the workers, the management, and themselves; the most common agents and conditions as reported in the occupational health clinic; and how the OHNs viewed resource allocation for treatment and prevention of these agents and conditions. A questionnaire was sent to 45 DOE Medical Directors to be given to a nurse in their clinic, and to 31 Nuclear Industry Nurses with a 62% return rate. The OHNs felt that radiation was perceived the most serious problem by both workers (44%) and management (26%), while they themselves perceived repetitive motion injuries the most serious problem (25%). The most common problem was thought to be musculoskeletal by all three of these groups (41%, 50%, & 54%, respectively). Musculoskeletal conditions were reported as the most common conditions (42.6%) in the clinic while radiation was reported as the least common agent (0.1%). The OHNs recommend that future resources be allocated to radiation, physical agents, and chemical exposures in that order.

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Chapter I: Introduction

Approximately 200,000 people are presently employed by facilities that are funded by the Department of Energy (Gebus, 1993). The Department had its beginnings in 1947, when the Atomic Energy Commission (AEC) was established to manage the new technology which had been used during World War II to develop the atomic bomb (Atomic Energy Commission, 1947). In 1975, the AEC was split into two agencies. The Nuclear Regulatory Commission was to oversee safeguards for the nuclear industry. The Energy Research and Development Agency (ERDA) inherited all the remaining parts of the former AEC, which included the ongoing studies of radiation exposure (Libby, 1979). In 1977, ERDA was replaced by the Department of Energy (DOE). This agency exists today and along with its energy related work, it continues to support studies on the effects of radiation and oversee health and safety programs for DOE workers.

The public perceives that the DOE workers' greatest hazard is radiation exposure. The entertainment and news media often portray nuclear energy and ionizing radiation as a technology that causes "abhorrent effects". As a result, few, if any people, including professionals are totally objective in evaluating radiation regardless of scientific or medical understanding (Hendee, 1991).

Because the potential hazards of radiation often receive greater attention by the media and therefore the public, it appears as if DOE allocates greater resources to these studies than the far greater risks of voluntary life-style factors such as smoking, drinking, and diet (Howe, 1991), as well as to the actual risks to which these

workers may be exposed. The recent report of the Secretarial Panel for the Evaluation of Epidemiologic Research Activities (SPEERA) of the DOE stated that "the majority of DOE's epidemiology research focuses on assessing health risks from low levels of radiation, and that the Department's employees, those of its contractors, and nearby communities are potentially exposed to a much broader range of health risks". The report further states that "many questions about non-nuclear energy related risks (for example, toxic chemicals and beryllium) should be addressed" (p. 37) and, in fact, recommends an increase in resources to do so. These recommendations should stimulate research proposals, a variety of which could investigate these non-radiation related exposures.

The Occupational Health Nurse (OHN) who works in DOE facilities is in a unique position to report on the health consequences of workplace exposures. Occupational Health Nurses (OHNs) make up a significant proportion of the health care professionals in the workplace and staff the OH clinics that see workers with work-related injuries and illness. In many specific industries, the OHN has become an expert by virtue of employment in facilities which produce unique products. This is especially true of OHNs who are employed in DOE governmental facilities or in other nuclear energy fields. DOE's historical bases in nuclear research and its commitment to radiation safety has given those who work in its facilities a chance to develop an educated perspective on radiation. In addition, OHNs in this industry are in a position to observe how occupational health resources are allocated and can report on any discrepancies that might exists between these resource allocations

and the occupational health needs of the DOE workers.

Given this unique position and expertise, a descriptive study of the perceptions of OHNs who work in DOE facilities was undertaken. The following questions were asked: 1) What are the most common and most serious occupational health risks for the workers, management, and OHNs as perceived by the nurses working in DOE occupational health clinics? 2) What are the most frequent exposures and conditions reported in the DOE occupational health clinics? 3) What is the current OH resource allocation prioritization, and what are the levels of future resource allocations recommended by these OHNs?

Conceptual Framework

The theoretical framework used to view this study is based in the institutional theory of organizations. According to Pfeffer (1982), this perspective addresses the issue of how and why organizational procedures viewed as "good" or "necessary" by the general public come to be initiated and maintained, although they do not reflect a rational need within the organization. Various authors (Pfeffer, 1982, Meyer & Rowen, 1977, & Scott, 1987) have used the institutional theory to examine and explain the actions as well as the persistence of bureaucratic organizational structures in such organizations as universities, cities, and governmental agencies. The product or mission of these organizations is somewhat vague and dependent upon the public defining its value for their specific organization. Specifically, Meyer & Rowen (1977) found that organizations incorporate practices and procedures defined by prevailing publicly defined rationalized concepts, independent of the

efficacy of these practices and procedures for their specific organization. For example, legal orders are especially prone to legitimate particular organizational structures. Within these organizations, the myths of their environments instead of the demands of their work activities are reflected in policies and practices. Within specific institutional environments certain arrangements have come to be culturally accepted and defined as good (Pfeffer, 1982). Therefore, many positions, policies, programs, and procedures of these organizations are enforced by public opinions about what the organization should do. Nuclear research facilities that have highly visible radiation control programs are not only complying with federal mandates, but are complying with the institutional definition of what practices represent a "good" nuclear power firm, including programs that signify concern for worker safety and the public's welfare.

From this framework flows the hypothesis that resources are allocated to certain programs over others based, not on actual reported clinical data, but on the perceptions that the problem is a serious and/or common occurrence. The perception of a hazard's health effects, (such as radiation), may demand more resources than the actual reported effects of that hazard. This perspective is useful as a framework for understanding and explaining the discrepancy between current resource allocation and the current needs of the DOE employee health programs.

Chapter II: Literature Review

Studies of Occupational Low Level Radiation Exposure

Risk estimates for cancer associated with exposure to low levels of radiation are currently extrapolated from known effects at high doses (Marwick, 1990). Cancer incidence and mortality in populations exposed to low levels of radiation have been examined in a few studies (Hendee,1991). Persons occupationally exposed are of special interest as they may be exposed to low levels of radiation over a long period of time. The Department of Energy (DOE) has maintained records on the radiation exposure of some 600,000 workers (Marwick, 1990).

In fact, the Department has maintained useful and long standing epidemiology studies of radiation exposures for over four decades (SPEERA, 1990). Though the original studies funded by DOE focused on the effects of radiation on those exposed to acute doses of radiation during the bombings of Japan, the DOE has continued studies of those exposed occupationally, such as the radium watch dial painters, plutonium workers, uranium miners, nuclear shipyard workers. More recent research has studied populations exposed to environmental levels of radiation (Report to the Secretary, SPEERA, 1990).

Most studies of workers exposed to low levels of radiation have not demonstrated any positive findings (Howe, 1991). Overall these workers have a lower mortality rate than the general public, a phenomena described by Alice Stewart, MD, and others, as the "healthy worker effect" (Marwick, 1990). Shore (1990) reports at least 350,00 workers are being followed for cancer outcomes in US

radiation facilities, but he expects the magnitude of effect to be small because of low doses. He estimates the average levels of occupational exposure are comparable to the levels of "natural background exposure that everyone has sustained by age 50" (p. 63). He states that "problems of falsely positive effects caused by chance or by study biases are difficult to distinguish from real effects" (p. 68). Several important studies of workers who have been occupationally exposed to low levels of rasiation are reviewed below.

Sever & Gilbert (1988) found it unlikely that congenital malformation and occupational exposure to low levels of radiation were associated in a study of births in two Washington counties where the Hanford site was a major employer. In another study of workers at the Hanford site Gilbert (1989) failed to find any correlation between individually monitored radiation exposure and mortality from all cancers combined or of mortality from leukemia, though a previously identified correlation for multiple myeloma persisted (p=0.002). These estimates are based on small numbers with wide confidence intervals.

Wing, et al. (1991) reported a detectable increase in leukemia and all cancers collectively in a population of workers at Oak Ridge National Laboratory even though Checkoway (1985) reported no such effect in this same group. This is explained by the authors as a consequence of longer follow up, an additional 7 years. Though the cancer death rate increased with total radiation dose, this relationship was not observed for any specific type of cancer including leukemia. Wing, et al. cautions that an overestimate would

occur if these workers were also exposed at the same time to chemical carcinogens such as, asbestos, benzene, and other solvents. Birth cohort and pay codes showed a stronger relationship to mortality than radiation dose, and overall mortality was lower than in the general public. Factors weakening the results were that the analysis looked at all cancers combined, and job classifications were used as a substitute for exposures. Any one worker could have been included more than once if he/she changed jobs.

Kendall (1992) studied approximately 95,000 British radiation workers who had been employed at several major nuclear sites in the United Kingdom. Deaths from all causes were lower than for the general public, attributed to the healthy worker effect, and death rates for all cancers were lower than expected. Death rates from all cancers, but in particular those from leukemia and multiple myeloma, increased slightly with an increase in dose. This study had several limitations. These workers were young, with an average age of 45, and the average follow up was less than fifteen years. No other occupational exposures (i.e. toxic metals or chemicals) were taken into account, nor were any life style factors included which might have influenced death rates.

In conclusion, these epidemiological studies of workers exposed to low level radiation have not provided clear evidence of any adverse effects. The studies have a number of problems. The small number of workers with low doses who are being followed results in relatively low statistical power. This is especially true when one is looking for rarely occurring outcomes like cancer, that are relatively rare in the general population. Confounding factors such

as healthy worker effect, diet, smoking behavior, alcohol consumption, and occupational exposures other than radiation, are a potential source of bias.

Worker exposures have been deliberately limited over the years with the objective of reducing harmful effects. Dose estimates have been based on personal dosimetry and these practices have changed with time as the technology has improved. The relative error in dose estimates for those who are either not exposed, or are at or near background levels, is very large (Gilbert, 1991). Length of follow up is another potential problem. Continuing studies of the Hanford workers by Gilbert, et al. have produced findings of no new cancers. However the studies of Oak Ridge workers by Wing, et al. reported an increase in cancers with an additional 7 years follow up. The conflicting results of these studies combined with the fact that many past radiation exposures were kept secret due to national security, has produced public confusion and mistrust. The DOE has suffered from a lack of credibility, and any studies with a negative outcome are viewed with suspicion by the public.

As a descendant of the AEC, DOE is considered "pro-nuclear". Even though a study examined by 87 individual and independent scientists, as reported by W. C. Rasmussen at MIT in 1975, on reactor safety resulted in the conclusion that the risks attached to nuclear power plants were very low compared to other natural and man-made risks (Libby, 1979), the AEC was accused of covering up unfavorable results of nuclear power reactor tests by such groups as the Union of Concerned Scientists (Cantelon, 1980). More recently Fritzchel (1989) quantified and compared the health risks of all

options for the production of energy and found that the occupational health risks as well as risks to the general public for routine nuclear energy are lower than other conventional energy sources.

Still, nuclear energy and ionizing radiation are technologies that are frequently viewed with suspicion by the public. Exposure to ionizing radiation is particularly frightening because the risks are due to forces outside the range of the human senses (Hendee, 1991).

In a 1991 study by Sjoberg, 236 persons who worked at two power plants in Sweden judged job-related radiation risks about average as compared to a number of other risks. There were exceptions especially among those hired for temporary jobs. The experience of job related risks was related to the level of knowledge about radiation and its risks, those who knew less experienced larger risks. Level of anxiety correlated with perceived radiation risks, whereas job satisfaction was more strongly related to conventional job risks.

In 1989, the Secretarial Panel for the Evaluation of Epidemiologic Research (SPEERA) was charged with making an independent evaluation of the DOE's epidemiology program. In addition to recommending that the past radiation exposure data be opened up for independent review and replication studies, the final report emphasizes a comprehensive occupational and environmental health program.

Studies of Other Occupational Hazards in DOE Workers

In an effort to determine if other health hazards were of interest to the DOE, personal communication with Dr. Terry Thomas, Director of Health Communication and Co-ordination Division, Office of

Epidemiology and Health Surveillance was established and revealed "only a few DOE sponsored studies of occupational exposures other than radiation" (T. L. Thomas, personal communication, February 12, 1993). The DOE Epidemiologic Research Program Selected Bibliography was reviewed and three studies of health hazards other than radiation were identified. Two studies adressed occupational exposure to metallic nickel (Godbold& Thopkins, 1979, & Polednek, 1981). and a third addressed occupational exposure to elemental mercury (Cragle, Hollis, Qualters, Tankersley, & Fry, 1984).

Two of these studies showed no evidence of an increase in mortality due to diseases or cancers of the suspected target organs (Godbold & Thompkins, 1979, & Cragle, et. al., 1984). The study by Polednek (1981) on nickel exposed welders revealed a slight excess of deaths from respiratory diseases. These were mainly attributable to emphysema. Welders are exposed to a variety of other substances, and limited data was available on the levels of these other contaminants. In addition, only limited data on smoking habits was available.

This review of the literature supports one of the SPEERA findings. This panel, after hearing the testimony of 177 people, visiting 6 DOE sites, and reviewing thousands of pages of reference material, concluded that the Department's existing occupational health program lacked comprehensivness, and that, historically, the most funding, and therefore the most studies on occupational hazards of DOE workers have been related to radiation exposures.

Literature Review of Survey Methodology

Surveys have been used as a data collection tool in many fields

including health care. The word survey means the collection of information from a variety of subjects who resemble the total population on the characteristics of interest to the researcher (Wilson 1989). A survey is a method to obtain information from large numbers of people. It can reflect a group's knowledge, attitudes, opinions, and behaviors.

Most surveys ask some descriptive information of the participants. Questions often included are age, sex, ethnicity, education, etc. Knowing the characteristics of the sample population makes generalizing to a population of interest more confident. Questions assessing the environment are often included, for example, size of industry, staffing patterns of the health facility, etc. Additional categories which address behaviors, as well as attitudes or feelings are also included in many surveys.

There are various types of surveys which can be used depending on the purpose of the study. Options used to study occupational nursing practice include face-to-face interviews, telephone interviews, and mailed questionnaires. Face-to-face interviews have a greater response rate and, along with telephone interviews, provide the opportunity for clarification of the questions. These advantages may be outweighed by the cost of interviewers and the time it takes to complete an adequate number of surveys.

A mailed survey is an inexpensive way to access large numbers of people over great distances in a relatively short time. A questionnaire, used for the collection of information and data from individuals through self administered questions (Basford and Downie, 1990), has the ability to combine flexibility with control.

Conducting a survey requires an understanding of more than devising the instrument, selecting the target group, and collecting the data. Interpretation and generalization of the findings can be difficult. Biases occur due to self selection, non-response and lack of control over the way the questionnaire is completed. In addition, the survey method cannot demonstrate true cause and effect. Despite these disadvantages, a survey can be the best method in many situations needing investigation.

Chapter III: Methodology

A cross sectional descriptive study was designed with the goal of surveying the OHNs who work in the DOE occupational health clinics. Despite its limitations, a survey was considered the most appropriate method to access the nurses who work in the various DOE organizations which are spread across great distances. In addition, a survey is inexpensive and time efficient. The purpose of this study is to ascertain the health risks of the DOE workers, as perceived by the DOE nurses, the most frequently reported exposures and conditions in the DOE occupational health clinics, and the current and future levels of resources allocated to prevent and treat these exposures and conditions.

The proposed study was reviewed and approved by Lawrence Berkeley Laboratory's Human Use Committee, University of California at Berkeley's Committee for Protection of Human Subjects, and University of California at San Francisco's Committee on Human Research.

Sample

The population of interest is OHNs who work in DOE facilities. In order to identify this population, a list of 45 Medical Directors was obtained from The Department of Energy's Office of Occupational Health. The directors were asked to give the survey to a nurse who worked in the occupational health clinic. In addition, the individual names of 31 nurses were obtained from a roster of those who had attended the Nurses in Nuclear Industries annual breakfast at the American Occupational Health Conference in the last three years.

The questionnaire was mailed to a total of 76 people.

Instrument

The survey tool was a questionnaire designed to obtain some basic information about the following variables; number of employees; number of sites and number of health facilities within the organization; funding agencies; management oversight; type and number of employees in the medical clinic; hours of clinic operation; educational level of nurses; number of COHN; hours of CEUs (most useful and most desired); company support for CEUs; respondents' position in the clinic; and years of experience.

The nurses were asked what they thought were the most common and most serious health risks were, and what they believed the workers and mangement perceived as the most serious and most common health risks.

In order to answer the question what are the most frequent exposures and conditions most likely to occur in this population, questions were asked regarding the average daily census of the clinic (excluding routine physicals), and the percentage of the work related cases. The nurses were also asked to estimate the percent of cases involving exposure to chemicals, radiation (alarms and actual); biological, environmental, and other agents. Another question asked the nurses to estimate the percentages of cases seen with the following conditions: musculoskeletal, dematological, stress, repetitive motion injuries, splinters and lacerations, burns, eye injuries, and others.

In order to answer the question regarding the current and future resource allocations, the nurse was asked to rank resource

allocation in the various exposure categories both as to how it is currently allocated and as to how future allocation should be made for prevention of these exposures.

The questionnaire was pretested by various practicing occupational health nurses, three within the DOE community, as well as by two OHNs who do not work at DOE facilities. Ambiguous questions were reworded and other questions were added according to their recommendations.

Procedure

Questionnaires and cover letters were sent to the nurses who had signed the Nurses in Nuclear Industry roster. The same questionnaire and cover letter were sent to the medical directors with a letter to the director requesting him to give the survey to a nurse who worked in the occupational medical clinic. The total number of potential OHN participants was 76. At the end of 6 weeks another packet of materials was mailed to those who had not responded with an additional letter requesting their participation. A total of 47 (62%) were returned. Eight (10.5%) were unusable due to incomplete data, or because the respondent terminated a position in that facility. No information on non-responders was available to compare with those responding to the survey. In reviewing the results the DOE nurses' responses were separated from the nuclear industry nurses' responses in order to look at the differences between the two.

Using a Macintosch IISC computer the data was entered into a flat file data base called FileMaker Pro. The calculation fields on this data base were designed to give a mean. The rest of the

questions were reviewed and tabulated by hand. A total of 39 (51%) questionnaires were used in the following descriptive analysis. The N varied for some questions therefore the N presented in specific tables is based on the number of participants who answered that specific question.

Chapter IV: Results

Results are grouped into three sections. The first includes demographic information such as number of employees, sources of funding, etc. in order to characterize the sites where the respondents were employed. The second section contains the results of the questions asked to elicit the perceptions of the OHNs of what the workers, management, and OHNs perceive as the most serious and the most common occupational health risks in their facility.

The third section gives the census results of the occupational health clinics, including the most frequent exposures and conditions. The fourth section contains the results of the questions which were designed to obtain the current and future resource allocations to prevent and treat OH exposures and conditions in the facilities surveyed.

Site characterization

Size

The mean number of employees in the represented facilities was calculated at 7462. However, most facilities employed 1001-5000 (Table 1). No facility reported under 100, and two that reported under 300 stated they worked for an organization with 16,500 employees in 11 plant sites with 7 health facilities. Eleven (28%) reported working for an organization with more than one health facility. A total of 23 (59%) reported working for an organization that had one plant site and one health facility. However, 5 (13%) reported working in a single health facility for an organization with more than one site.

Funding

The majority, 33 (85%), reported being funded by DOE. The remaining 6 (15%) reported "private" nuclear industry funding.

Type of personnel employed in the occupational health department

Registered nurses comprised the largest group of health care professionals. Within the 39 health facilities 192.8 FTEs were employed as Registered Nurses (Table 2). A total of 37 (95%) facilities had at least one Registered Nurse. Of the remaining two facilities one reported a full time physician's assistant and 0.125 FTEs as RNs, and the other reported a full time LVN .

The total number of FTEs that were physicians in this sample was 90.2, however, 9 (23%) reported having 0.5 MDs or less. Nine facilities accounted for the total number of 76 Industrial Hygienists and the same 9 also reported 68 safety engineers. The remaining 28 reported none of these two professions. This may be accounted for by the possibility that in these organizations the health facility may actually function as a part of a larger Environmental Safety & Health Group which employs all the ES&H disciplines, whereas, in other organizations, the OH clinic may operate as a separate group employing only health care professionals.

Clinic hours

Thirty facilities (77%) reported operating the clinic for one shift of 8-10 hours on Monday through Friday Four (10%) reported operating 24 hour clinics. Three (8%) reported hours on Monday through Friday that comprised two shifts, and two (5%) reported operating one shift on Monday through Thursday. Coverage during off

hours was mainly provided by fire departments (14) or a combination of security and first responders. Three reported coverage by other facilities. A Health Care Professional was reportedly on call at 10 facilities, 7 of these had RNs on call and 3 had MDs on call. Six facilities reported no off hour emergency coverage.

Perceptions of Most Serious and Most Common Occupational Health Risks

Questions 15 a & b, 16 a & b, and 17 a & b asked the OHNs to name what they thought the employees perceived to be the most serious and most common occupational health risks; what they thought management perceived most serious and most common, as well as what they themselves perceived to be the most serious and most common occupational health risks. (The responses were grouped into like categories, and in the case where two or more agents or conditions were listed, the tie was divided equally between the two or three agents or conditions).

The OHNs thought radiation exposure was considered by far the most serious concern by the employee (44%) (Table 3), and chemical exposures as second (14%). A total of 26% of the OHNs felt that management perceived radiation to be the most serious, and musculoskeletal injuries as second at 21% (Table 4). The nurses themselves perceived repetitive motion injuries (25%) and chemical exposures (21%) to be the most serious (Table 5). According to Table 5, 6% of the OHNs listed radiation as the most serious. This percentage was based on three OHNs, two of whom listed radiation and chemicals as equally serious. (When more than one agent was listed, the tie was divided equally between the two.) These three

responses were compared to the agents as reported in the OH clinics, and one listed actual radiation cases at >1%, one listed radiation alarms of 5%, and the third listed neither.

The OHNs felt that employees perceived stress as the most serious 9% of the time, while they themselves also listed stress as the third highest at 13% (Tables 3 &5).

The OHNs thought both the employees (41%) and management (50%) perceived musculoskeletal injuries to be the most common (Tables 3 & 4), while they themselves also listed musculoskeletal injuries as most common at 54% of the time (Table 5). Cuts and abrasions were thought to be perceived second most common by both employees (16%) and management (12%). The nurses felt that repetitive motion injuries were the second most common (17%). Only 4% listed cuts and abrasions as the most common. The nurses felt management seemed to think repetitive motion injuries the least common at 4% (Table 4).

Conditions

A range of 3-250 visits to the clinic per day were reported by 38 respondents. The average was 48. Of these 48 visits an average of 21.5% were work related with two reporting 75.0% and five reporting 1.0% or less.

Agents

A total of 29 respondents answered questions which asked them to estimate the percentage of work related cases due to various agents (Table 6). The "other" category was reported as the largest agent at 78.4%. (No one choose to report what the "other" category might be, however, since the largest number of types of conditions

reported in the next question was musculoskelal, the "other" agent was likely related to physical hazards). Environmental agents, such as noise, vibration, etc. were reported as the second largest agent. Radiation "alarms" were averaged at 0.3% while cases which actually involved radiation were reported least often (0.1%). The larger facilities were more apt to report radiation as an agent, while the smaller facilities reported a larger percentage of cases involving chemical and environmental agents (Table 7).

Conditions

When the respondents were asked to estimate the percent of cases in the last 6 mos. which involved certain conditions (Table 8), as might be expected, the two largest categories were musculoskeletal, such as strains, sprains and fractures (42.6%), and lacerations and splinters (23.1%). Repetitive motion injuries were reported an average of 11.2%. Other types of conditions (4.6%) were given as electric shock, respiratory conditions (such as occupational pneumonitis and asthma), snake bites, bee stings, aeotitis media, and gastrointestinal symptoms and conjunctivitis due to chemical fumes. Smaller facilities reported a larger percentage of repetitive motion injuries.

Resource allocation

In accessing resource allocations the nurses were asked to rank six potential exposure agents from 1 (highest) to 6 (lowest) based on current resource allocations as compared to what the resource allocations should be for the same six agents in the future. The largest number of resources were currently reported as going to radiation exposures (score 1.8) The next highest was chemical

exposure (2.6) and then physical exposures (3.5) (Table 10).

The nurses also felt that future resources should be allocated to radiation exposures (2.8), however, an equal number of nurses scored physical hazards as number one, giving it a ranking of 2.8 for future resource allocations. Chemical exposures were third (3.2) in desired future resources. The scores for the current levels of resources were individually cross tabulated with the scores for the future resources and grouped by agent (Table 11). The largest percentage of nurses (64%) would desire increased resources for psychological stress. Increased resources for physical exposures was desired by 55%, while only 9% would increase future resources for radiation.

Decreases in ranking for future resources were the greatest for chemical exposures (52%), and least desired for physical exposures (9%). Fifty-five percent felt that resources were adequate, (i.e. current and future ranking were the same), for biological exposures, and 52% felt the resources were adequate for radiation exposures. Interestingly, the nurses who reported cases actually involving radiation did not rank radiation as needing the highest future resource allocations. Of those reporting cases either actual or alarms, only one felt that radiation should receive the highest future resources.

<u>DOE nurses vs. Nuclear Industry nurses</u>

Of the 28 DOE nurses who responded, repetitive motion injuries (34%), musculoskeletal injuries (19%), and chemicals (19%) were listed as the most serious occupational health risks. However, a total of 41% of these OHNs recommended the greatest resources for radiation while 59% would decrease the current levels of resources

in the future (Table 11).

The five respondents who reported working for the nuclear power industry differed from the DOE nurses in that none of them felt radiation was the most serious occupational hazard for their employees. They listed burns (n=2), electrocution (n=1), accidents (n=1), and job stress (n=1) as the most serious occupational health hazards. All but one of the 5 who answered the question on resource allocations (83%) felt that radiation exposure does, and should, receive the most resources (Table 12).

Chapter V: Discussion

Significance

Although a number of surveys of OHNs in various industries have been published, none have ever targeted OHNs who worked in facilities where radiation is an occupational hazard. To a large extent the public perceives radiation to be the number one hazard of the DOE employees (Hendee, 1991). This study provides the basis for comparing actual agents and conditions as reported in the responding DOE facilities' occupational health clinics with the perceptions OHNs had about what was believed the most serious and most common hazards as perceived by employees and management of these same facilities. The information gathered here may help to explain current resource allocations, as well as provide a framework for understanding future resource allocations.

The respondants in the study reported that RNs are the largest group of health care professionals in their facilities with 95% employing at least one RN (mean=5). This is consistent with other studies of OHNs and of other industries over the years (Chovil, 1984 & Lusk, 1988). As stated earlier, the demographics of DOE health facilities are not yet available from the DOE Office of Occupational Medicine. Without this information, generalizing the findings of this survey to the 13 non-responding DOE medical facilities is not possible. In addition, it is possible that the Medical Directors of the non-responders were not able to give the survey to a nurse in their facility as directed because they did not employ any RNs. However, three of the 13 non-responding Medical Directors returned the

survey and said they would not be able to give the survey to a nurse in their facility because of concerns about procedures for responding to the request, i.e. official sanction from DOE or from their own corporate headquarters. No one returned the survey saying that they did not employ RNs. It seems likely that most DOE facilities do employ RNs in some capacity. Assuming this the case, a large and as of yet untapped resource of future DOE occupational health studies exists. In particular this group of professionals could be involved in the future studies as recommended by the SPEERA report.

The results of this study confirm that, as reported by the OHNs, radiation is perceived by both the employees and managment as the most serious problem, even though these same facilities report less than 1% of the problems seen in the OH clinic as being related to radiation exposure. The possiblity exists that this knowledge of actual numbers of radiation exposure may have influenced the OHNs to the extent that they themselves did not list radiation as a serious or common problem.

It may be that the cases involving radiation are not reported to the clinic. Though not likely, there is no way to ascertain from this survey if this is a common practice. If it were the common procedure it would explain the low percentage reported in this study. However, a more likely explaination is that DOE's ALARA (As Low As Reasonably Achievable) Principle has been successful in reducing radiation exposures through increased control mechanisms at the job site. If this were the case it would explain why the OHNs who did report radiation was the most serious problem were those with the most experience in the DOE facilities (18+ years), and it may well be

that they observed the effects of a radiation exposure early in their careers.

The perception that radiation exists as a serious and/or common problem also seemed to be influenced by the size of the organization. Larger facilities may tend to have the funds and the space to support more work which involves greater radiation hazards.

It seemed apparent to these OHNs that current resources are more likely devoted to radiation than to other progams (average ranking 1.8). Although the OHNs also recommend that future resources be allocated for radiation, the group was not as consistent in rating this as number one (average rating 2.8). In fact the DOE nurses ranked both chemical and physical exposures higher than radiation for these resources (2.9 for both). Even though problems from radiation were not seen in their clinics, the nuclear industry nurses were more likely to rate radiation as number one for future resources (1.6) than the DOE nurses (3.0). This difference may be explained by the fact that the nuclear industry nurses also reported the funding for their facilities as private. This might mean that these organizations may be owned by stockholders and could be even more sensitive to public perception. In addition the survey questions did not clearly delineate whether radiation included only ionizing radiation, or whether it might also include electromagnetic radiation, a recent concern of the media.

Limitation

Like all suveys this study was limited in its ability to generalize to the population of interest. Bias could exist due to self selection and lack of control over the completion of the questionnaire. The

small numbers did not allow for sufficient power to demonstrate statistical significance, therefore these tests were not performed. The study generates more questions than it answers. However, the study is significant in that the conditions and agents reported in the clinics could be targeted for future DOE wide interventions. The study could have been strengthened if the demograghics of these facilities were available, and if budget information was obtainable.

Implications

Most health and safety programs should look to frequency and severity of target problems and then allocate resources to develop programs to alleviate those problems. This study explores the effect that perception may have on the allocation of resources. According to the Sjoberg study which was referenced in the literature review, perception of radiation risks was less in those employees of two Swedish nuclear power plants who had some knowledge about radiation and its risks. If, in fact, according to the theoretical framework persented earlier, perception of risk is a driving force for implementation of policy and practice, then it is incumbent upon the DOE health care professionals to educate first themselves, and then management and the workers in these facilities with regards to the most common and most severe problems in their practice. OHNs in these facilities need to be trained in the hazards of radiation and the prevention and treatment of these exposures. By understanding the risks of radiation, the OHN can convey better information to the worker and to management about the need for resource allocation for the problems which face these workers.

Future Research

This descriptive study should only serve to stimulate the reader to future research. A question that could be asked asked is: Do the employees and management of these DOE facilities agree with what the OHNs reported as their risk perceptions? A survey of these employees similar to the Sjoberg study could be undertaken to answer this question. Since management often determines the resource allocations, it would be useful to determine their true perceptions in the same way. Aside from radiation, little information exists in the literature about the occupational health problems of these DOE workers. Future studies possibly based in the OH clinics should be undertaken and published.

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Table 1
Number of Employees in Reporting DOE Organizations, 1992

Number of Employees in Organization	Number of Organizations (N=39)	Percentage
0 - 100	0	
101 - 300	4	(10%)
301 - 1,000	5	(13%)
1,001 - 5,000	16	(41%)
> 5,000	14	(36%)

Table 2
Personnel Employed within Sample of Health Facilities of DOE, 1992
N=39

Type of Employee	Total Number of FTEs
Licensed Vocational Nurse	7
Registered Nurses	
RN (2 years)	38
RN (3 years)	81
RN Bachelors	58.8
RN Masters	15
RN's Total	**192.8**
Physicians	90.2
Medical Technicians	60
Counselors	36.6
Epidemiologists	2
Safety Engineers	68
Industrial Hygienists	76
Physician Assistants	12
COHN's	55

Table 3

Answer to Question #15a &b

Based on your contact with employees, what do you think they perceived to be their most serious and most common occupational health risk?

(*N*=35)

% Most Serious	n		% Most Common Injury	n	
Radiation Exposure	15.5+	44%	Musculoskeletal *	14.5	41%
Chemical Exposure	5.0	14%	Cuts	5.5	16%
Stress	3.0	9%	Radiation Exposure	4.0	11%
Musculoskeletal	3.0	9%	Repetitive Motion Injury	3.0	9%
Indoor Air	2.0	6%	Stress	2.0	6%
Electrical	2.0	6%	Heat	2.0	6%
Repetitive Motion Injury	1.5	4%	Chemical	1.5	4%
Blood	1.0	3%	Indoor Air Quality	1.0	3%
Asbestos	1.0	3%	Physical	1.0	3%
Accidents due to unsafe acts or conditions	1.0	3%	Accidents due to unsafe acts or conditions	1.0	3%

+When more than one agent was listed - the tie was divided equally between the 2 (or 3) agents.

* (7 of these are back strains)

Table 4
Answer to Question #17a & b
What do you think Management perceives to be the most serious and most common occupational health risk?
(*N*=34)

% Most Serious	n		% Most Common	n	
Radiation Exposure	8.8+	26%	Musculoskeletal *	17.0	50%
Musculoskeletal	7.0	21%	Cuts & Abrasions	4.0	12%
Chemical Exposure	4.8	14%	"Accidents"	4.0	12%
Repetitive Motion Injury	3.5	10%	Eye Injuries	2.0	6%
Falls	2.8	8%	Stress	2.0	6%
Unknown	2.0	6%	Unknown	2.0	6%
Electrical	1.3	4%	Falls	1.5	5%
Trauma	1.3	4%	Repetitive Motion Injury	1.5	4%
Stress	1.3	4%	* (9 of these are back strains)		
"Accidents"	1.0	4%			

+When more than one agent was listed - the tie was divided equally between the 2 (or 3) agents.

Table 5
Answer to Question #16a & b
What do you (the OHN) think is the most serious & most common occupational health risk facing employees?
(*N*=34)

% Most Serious	n		% Most Common	n	
Repetitive Motion Injury	8.5+	25%	Musculoskeletal *	18.5	54%
Chemical Exposure	7.0	21%	Repetitive Motion Injury	5.0	15%
Stress	4.5	13%	Eye Injuries	3.0	9%
Musculoskeletal	4.0	12%	Stress	3.0	9%
Trauma	2.0	6%	Cuts	1.5	4%
Burns	2.0	6%	Indoor Air Quality	1.0	3%
Electrical Injury	2.0	6%	Lack of Health Education	1.0	3%
Radiation Exposure	2.0	6%	Poor physical condition, unsafe, careless acts	1.0	3%
Blood	1.0	3%			
Accidents due to unsafe acts or conditions	1.0	3%			

+When more than one agent was listed - the tie was divided equally between the 2 (or 3) agents.

* (4 of these are backs)

Table 6
Average Percentage Estimate of Work Related Cases
Involving the Following Agents in 28 OH Settings, DOE, 1992

Agent Involved	Average Percentage Mean (±SD) Value
Other	78.4% ± 30.9
Environmental e.g., noise, vibration, etc.	12.4% ± 25.6
Biological Exposure	4.1% ± 12.7
Chemical Exposure	4.6% ± 6.0
Radiation Exposure - (alarms)	0.3% ± 1.0
Radiation Exposure - (actual)	0.1% ± 0.4

Table 7
Average Percentage Estimates of the Most Frequently
Reported Agents by Size of Organization, DOE, 1992

	101-300 N=2	301-1,000 N=3	1000-5000 N=12	>5000 N=11
Other	37.0%	90.6%	75.4%	86.0%
Environmental	56.0%	1.2%	16.3%	3.2%
Biological	1.0%		2.7%	7.4%
Chemical	6.0%	8.2%	4.9%	2.8%
Radiation (Alarms)			0.6%	0.2%
Radiation (Actual)			0.08%	0.3%

Table 8
Average Percentage Estimate of Work Related Cases Involving the Following Conditions in 27 OH Settings, DOE, 1992

Conditions	Average Percentage Mean (±SD) Value
Musculoskeletal (strains, sprains, & fractures)	42.6% ± 20.3
Lacerations, Splinters	23.1% ± 12.5
Repetitive Motion Injuries (CTDs)	11.2% ± 10.0
Dermatology	5.5% ± 5.9
Eye (other than chemical exposure)	5.3% ± 6.4
Stress	4.7% ± 7.5
Other	4.6% ± 11.0
Burns	2.8% ± 3.0

Table 9
Average Percentage Estimates of Most Frequently Reported Conditions by Size of Organization, DOE, 1992

	101-300 N=2	301-1,000 N=3	1000-5000 N=11	>5000 N=11
Musculoskeletal	44.5%	49.3%	42.5%	40.8%
Lacerations, splinters	22.5%	17.3%	26.0%	21.8%
RMI	22.0%	3.2%	11.6%	11.0%
Dermatological	3.5%	6.8%	5.4%	5.6%
Eye Injury	2.5%	4.7%	3.6%	7.7%
Stress	2.5%	0.3%	3.0%	8.2%
Other	2.5%	16.5%	4.9%	1.5%
Burns	0.0%	1.8%	3.4%	3.4%

Table 10
Resources Allocated for Prevention and Treatment of Certain Agents
as ranked by DOE and Nuclear Industry Nurses Combined

Current Levels *N*=33	(Score Average of all Rankings)	Future Levels *N*=33	Score Average of all Rankings)
Radiation Exposure	1.8 ± 1.5	Radiation Exposure	2.8 ± 2.0
Chemical Exposure	2.6 ± 1.1	Physical Exposure	2.8 ± 1.5
Physical Exposure	3.5 ± 1.4	Chemical Exposure	3.2 ± 1.5
Substance Abuse	4.0 ± 1.4	Psychological Stress	3.5 ± 1.7
Biological Exposure	4.2 ± 1.5	Biological Exposure	4.2 ± 1.4
Psychological Stress	5.0 ± 1.3	Substance Abuse	4.3 ± 1.4
	Mean (±SD) Value		Mean (±SD) Value

(1=highest level; 6=lowest level)

Table 11
Results of Current Resource Rankings
Cross Tabulated with Future Rankings
N=33

	Radiation Exposures	Physical Exposures	Chemical Exposures	Substance Abuse	Psychological Stress	Biological Exposures
% of OHN's who ranked current & future resources the same	52% (n=17)	36% (n=12)	36% (n=12)	33% (n=11)	24% (n=8)	55% (n=18)
% of OHN's who ranked future <u>less than</u> current resources	39% (n=13)	9% (n=3)	52% (n=17)	39% (n=13)	12% (n=4)	27% (n=9)
% of OHN's who ranked future <u>more than</u> current resources	9% (n=3)	55% (n=18)	12% (n=4)	27% (n=9)	64% (n=21)	18% (n=6)

Table 12
Resources allocated for Prevention and Treatment
of Certain Agents as Ranked by DOE Nurses

Current Levels *N*=28	(Score Average of all Rankings)	Future Levels *N*=28	Score Average of all Rankings)
Radiation Exposure	1.9 ± 1.6	Chemical Exposure	2.9 ± 1.3
Chemical Exposure	2.3 ± 0.9	Physical Exposure	2.9 ± 1.5
Physical Exposure	3.6 ± 1.5	Radiation Exposure	3.0 ± 2.0
BiologicalExposure	4.0 ± 1.6	Psychological Stress	3.6 ± 1.8
Substance Abuse	4.3 ± 1.2	Biological Exposure	4.1 ± 1.5
Psychological Stress	4.8 ± 1.3	Substance Abuse	4.3 ± 1.5

(1=highest level; 6=lowest level)

Table 13
Resources allocated for Prevention and Treatment of
Certain Agents as ranked by Nuclear Industry Nurses

Current Levels *N*=5	(Score Average of all Rankings)	Future Levels *N*=5	Score Average of all Rankings)
Radiation Exposure	1.2 ± 0.4	Radiation Exposures	1.6 ± 1.3
Substance Abuse	1.8 ± 0.8	Physical Exposure	2.0 ± 0.7
Physical Exposure	3.4 ± 1.1	Pyschological Stress	2.6 ± 0.5
Chemical Exposure	4.2 ± 0.8	Substance Abuse	4.4 ± 1.1
Biological Exposure	4.8 ± 0.8	Biological Exposure	4.8 ± 0.8
Psychological Stress	6.0 ± 0.0	Chemical Exposure	5.0 ± 1.2

(1= highest level; 6= lowest level)

Appendix A

Dear Medical Director:

I am a Master's Candidate in the School of Nursing at the University of California at San Francisco. As part of this program I must complete a thesis. My thesis is based on a survey of nurses who work in the Department of Energy's Contractor Medical Facilities.

Enclosed is a copy of this survey and a cover letter to potiential participants. I would greatly appreciate it if you would give this survey, to be returned by December 31, 1992, to a nurse in your facility and allow and encourage his/her participation in this study.

Thank you very much for your support of my educational endeavors.

Connie Grondona, RN, BA, COHN
UCSF Master's Candidate
Health Services Group
Lawrence Berkeley Laboratory
One Cyclotron Road
Berkeley, CA, 94720

WORK SITE RISK ASSESSMENT INFORMATION AND CONSENT LETTER

Because you are a nurse and working in a DOE contractor medical facility, and/or have shown an interest in the Nurses in Nuclear Industry group, you are being asked to provide information which will help to define the risks of your employees and the resource allocations at your facility. Attached is a four page questionnaire relating to the study objectives described above, and a prepaid, preaddressed return envelope. Please detach this information sheet from the questionnaire and keep it as a record of your participation in the study.

All of your answers are voluntary and completely confidential. Your responses will be entered into a computer with a coded identification number and there will be no way in which your responses can be traced to you. The results of this study will be used in the preparation of my Master's thesis. Some aggregate information will be available to such agencies as the Department of Energy, University of California at San Fransico, and Oak Ridge Institute for Science and Education. A summary of the findings will also be available to you upon completion of the study.

INSTRUCTIONS:

1. Please answer all questions in the space provided. If you need additional space use the back of the page and indicate the question to which the response refers.

2. After completing the questionnaire return it in the enclosed envelope by December 31, 1992.

3. If you have any questions please feel free to contact me at (510) 486-6266. Any written questions can be directed to me at:

Connie Grondona, RN, BA, COHN
UCSF Master's Candidate
Health Services Group
Bldg 26-104
Lawrence Berkeley Laboratory
One Cycloton Road
Berkeley, CA, 94720

Your Subject Bill of Rights:

If I have comments about participation in this study, I should first talk with the investigator. If for some reason I do not wish to do this, I may contact the Lawrence Berkeley Laboratory Human Use Committee office at (510) 486-5507, or by writing: LBL Human Use Committee, B90-2148, #1 Cyclotron Rd., Berkeley CA. 94720.

ID NUMBER _____

WORK SITE RISK ASSESSMENT

1. What is the total number of employees in your organization?
0 - 100 ____ 101 - 300 ____ 301-1000____ 1001-5000____ >5000____

2. How many separate plant sites does your organization occupy? _____
a. If your organization has >1 plant site, how many health facilities exist overall? _____

3. What entity(ies) provides your organization's major source of funding?
DOE____ DOD____ Other (Please Specify)_____

4. What entity(ies) provides management of your organization? (ie. title of federal org., university, private org.) _____

5. Is your medical facility run by an outside contractor? Yes _____ No_____

6. Indicate in the list below the total FTE's (Full Time Equivalents) in each of the following categories who are employed in the medical clinic (if >1 clinic, please combine totals for all).

Licensed Practical Nurse_____		Med Techs	_____
Registered Nurses			
RN (2 years)	_____	Counselors	_____
RN (3 years)	_____	Toxicologists	_____
Baccalaureate	_____	Epidemiologists	_____
Masters	_____	Safety Engineers	_____
Doctorate	_____	Industrial Hygenists	_____
Physicians	_____	Physician's Assistants	_____

Other (Please List Titles): _____ _____ _____

7. How many RN's in your medical clinic are also COHN's? _____

8. What are the hours and days the medical clinic is open?
_____ to _____, _____ through _____

9. How many shifts staff one 24 - hour period at the clinic? (three shifts possible) _____

10. Who in the medical clinic, or what other department, covers off shifts?_____

11. Average daily patient census (excluding PE workups)_____

12. Of the average daily census:
Percent of cases work related?_____% Percent of cases non-work related? _____%

ID NUMBER _____

13. Of all work related cases in the past six months, estimate the percent of cases that have involved the following agents: (Please ensure total = 100%).

Chemical Exposure ____% Radiation Exposure (alarms) ____% Environmental____% (eg. noise, vibration)

Biological Exposure ____% Radiation Exposure (actual) ____% Other ____%

14. Of all work related cases in the past six months, estimate the percent of cases that have involved the following conditions: (Please ensure total = 100%)

Musculoskeletal (strains/sprains/fractures) _____% Dermatology _____% Stress _____%

Repetitive Motion Injuries_____% Splinters, Lacerations _____% Burns _____%

Eye (other than chemical exposure) _____% Other (please give example) _____%

15a. Based on your contact with employees, what do you think **they** perceive to be their most **serious** occupational health risk?

15b. What do you think **employees** perceive to be their most **common** occupational health risk?

16a. What do **you** think is the most **serious** occupational health risk facing employees?

16b. What do **you** think is the most **common** occupational health risk facing employees?

17a. What do you think **management** perceives to be the most **serious** occupational health risk facing employees?

17b. What do you think **management** perceives to be the most **common** occupational health risk facing employees?

18. Does your organization offer any of the following programs? (check off all that apply)

Hearing Conservation _____ Drug Free Workplace Program _____

Respiratory Protection _____ Medical Surveillance for Chemicals _____

Bioassay _____ Heavy Equipment Certification _____

ID NUMBER _____

19. Over the past six month period, has your clinic performed the following procedures?

	YES	NO
•Audiometric (hearing) exams for workplace noise	_____	_____
•Eye (vision) exams for job related skills	_____	_____
•Pulmonary function test spirometry to evaluate occupational exposure to dust or fumes	_____	_____
•Blood or urine tests for lead, cadmium, pesticides or other workplace exposures	_____	_____
•Urine tests for work-related drug testing	_____	_____
• Physical therapy of clients with work-related problems	_____	_____
• Urine analysis for radiation exposure	_____	_____

20. Does your company offer the following health promotion programs? (Circle yes or no)

Smoking Cessation	yes / no	Blood Pressure Reduction	yes / no
Cardiovascular Fitness	yes / no	Nutrition/Diet information	yes / no
Substance Abuse	yes / no	Stress Reduction	yes / no
EAP	yes / no	Breast Self-Exam Program	yes / no

21. To the best of your knowledge, rank the following six programs in order of 1 through 6* based on your organization's <u>current levels</u> of resource allocation for the prevention and treatment of:

*(1 = highest level through 6 = lowest level)

Chemical exposures (eg: solvents, heavy metals, dusts, irritants, pesticides, carcinogens) _____

Radiation exposures (eg: ionizing, non-ionizing) _____

Biological Exposures (eg: blood and blood products, bacteria, viruses) _____

Physical Exposures (eg: ergonomic stressers, vibration, noise, temperature, accident prevention factors) _____

Psychological Stress (eg: job demands, control, security, work environment, relationships) _____

Substance Abuse (eg: drug-free workplace, counseling) _____

ID NUMBER _____

22. Rank the following six programs in order of 1 through 6* based on what you think your organizaton's future levels of resource allocation should be for the prevention and treatment of:
*(1 = highest level through 6 = lowest level)

Chemical exposures (eg: solvents, heavy metals, dusts, irritants, pesticides, carcinogens) _____

Radiation exposures (eg: ionizing, non-ionizing) _____

Biological Exposure (eg: blood and blood products, bacteria, viruses) _____

Physical Exposure (eg: ergonomic stressors, vibration, noise, temperature, accident prevention factors) _____

Psychological Stress (eg: job demands, control, security, work environment, relationships) _____

Substance Abuse (eg: drug-free workplace, counseling) _____

23. How many CEU's (Continuing Education Units) have you (individual completing survey) earned in the past five years? _____ CEU's

24. If you have taken CEU's in the past - what course did you find most useful towards your care of patients? _____

25. What CEU course do you most desire to take? _____

26. Does your company provide on-site training for occupational health topics?
Yes _____ No _____

27. Does your company provide financial assistance, other than time off, for continuing education?
Yes _____ No _____

28. Does your company provide time off for continuing education? Yes _____ No _____

29. What is your position within the health services department?
Staff _____ Manager _____ Consultant _____

30. How many years of experience do you (individual completing survey) have in Occupational Health Nursing? _____yrs.

31. How many years have you (individual completing survey) been a nurse at this particular facility? _____yrs.

Appendix B

COMMITTEE ON HUMAN RESEARCH
OFFICE OF RESEARCH AFFAIRS, Box 0962
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

CHR APPROVAL LETTER

TO: Jane Lipscomb, Ph.D.
Box 0608

Connie Grondona, R.N.
1 Cyclotron Rd., B26
Lawrence Berkeley Lab
Berkeley, CA 94720

RE: Work Site Risk Assessment - A Survey of Dept. of Energy (DOE) Nurses

The Committee on Human Research, the UCSF Institutional Review Board holding Department of Health and Human Services Multiple Assurance #M-1169, has reviewed and approved this application to involve humans as research subjects.

APPROVAL NUMBER: H6399-08741-01. This number is a UCSF CHR number and should be used on al consent forms, correspondence and patient charts.

APPROVAL DATE: December 10, 1992. **Expedited Review**

EXPIRATION DATE: December 1, 1993. If the project is to continue, it must be renewed *by the expiratic date*. See reverse side for details.

ADVERSE REACTIONS/COMPLICATIONS: All problems having to do with subject safety must be reported the CHR within ten working days.

MODIFICATIONS: All protocol changes involving subjects must have prior CHR approval.

QUESTIONS: Please contact the office of the Committee on Human Research at (415) 476-1814 or campu mail stop, Box 0962.

Sincerely,

Reese Jones / M Statt

Reese T. Jones, M.D.
Chairman
Committee on Human Research

HEPC Project # 92008741

LAWRENCE BERKELEY LABORATORY
Human Use Committee
Bldg.: 90 MS: 2148 Ext.: 5507

October 27, 1992

TO: Committee for Protection of Human Subjects
University of California, Berkeley

RE: GRONDONA, Connie, R.N.

"Work Site Risk Assessment"

Master's Thesis Project, Health Services Group, UCSF

This new protocol is submitted for review. The investigator will be surveying Occupational Health Nurses who work at Department of Energy (DOE) contractor medical facilities or who participated in a meeting of Nurses in Nuclear Industry. The survey will be used to assess work site risks and resource allocation at the nurses' institutions.

The surveys will be anonymous and the confidentiality of the subjects will be protected. The Human Use Committee felt that the questions on resource allocation and occupational risk to be sufficiently sensitive to preclude this project qualifying for an exemption under CPHS guidelines.

This project was approved by the LBL Human Use Committee for forwarding to CPHS for review and approval. Please call if you wish additional information concerning this project.

Sincerely,

Chris Byrne

Chris Byrne for
Kay Bristol, Executive Officer
LBL Human Use Committee

No certificate is needed at this time.

BERKELEY: COMMITTEE FOR PROTECT
OF HUMAN SUBJECTS
THE A & E BUILDING
642-7461 • FAX: 643-6272

November 16, 1992

CONNIE GRONDONA, R.N.
Bldg: 26 Room: 109
Lawrence Berkeley Laboratory

Re: "Work Site Risk Assessment" - Master's Thesis Project, Health Services Group, UCSF

The project referred to above was reviewed and approved by the Committee for Protection of Human Subjects on Friday, November 13, 1992.

The number of this project is 92-11-50. Please continue to refer to this number in all future correspondence about the project.

The expiration date of this approval is November 12, 1993. If the protocol is to continue, please submit a continuation protocol six weeks before the expiration date.

Please note that even though the Committee has approved your project, you must bring promptly to our attention any significant changes in the design or conduct of your research that affect human subjects.

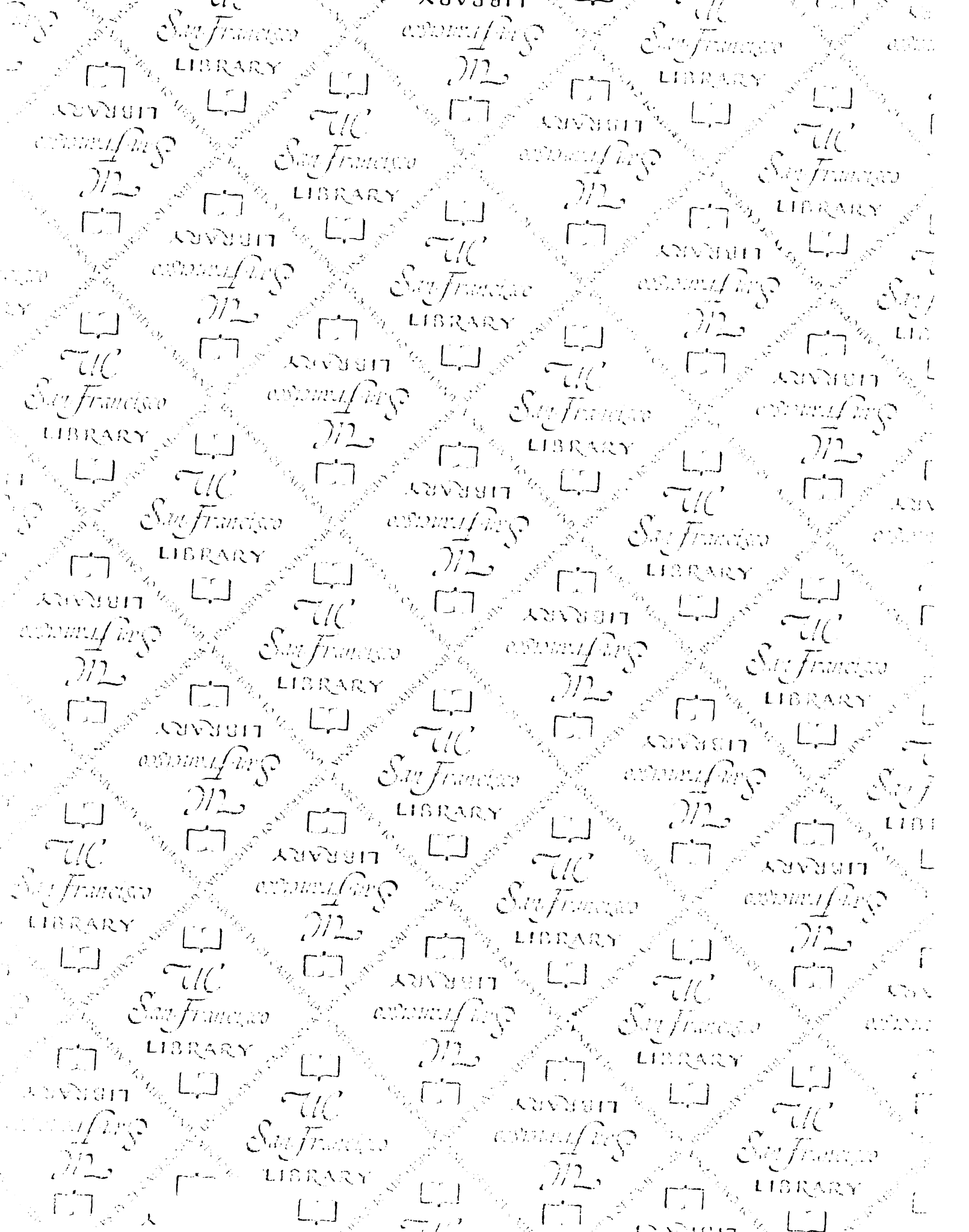
If you have any questions about this matter, please contact the CPHS staff at 642-7461, FAX 643-6272.

Austin Ranney

Austin Ranney
Professor of Political Science
Chair, CPHS

AR:nan

cc: Ms. Kay Bristol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