

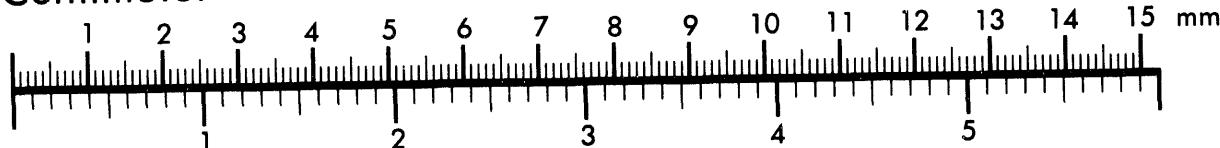


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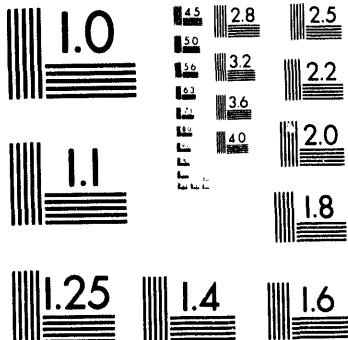
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Medical University of South Carolina
Environmental Hazards Assessment Program
Annual Report
Grant DE-FG01-92EW50625
July 1, 1993 - June 30, 1994
Deliverables

Vol. 3

**5.4.1 Environmental Medicine & Risk Communication:
Curriculum and a professional Support Network-
Department of Family Medicine**

53. Module 4- Environmental and Occupational Medicine in Private Practice: Choices for the Family Physician
54. Module 5- Using Hospital Site Visits for Teaching Environmental and Occupational Medicine
55. Environmental Medicine Update- Volume I, Numbers 1-11
56. Lectures described in the July 1993- June 1994 Summary Reports
57. OEMO information card and rotary file card

**5.4.2 Environmental Hazards Assessment and Education
Program in Pharmacy Graduate Education in Risk
Assessment**

58. Poster

5.4.3 Graduate Education Risk Assessment

59. Profile sheets
60. Award letter
61. Application form
62. Copy of Handbook
63. List of faculty participating
64. Brochure
65. Poster
66. Syllabi for courses
67. Curriculum vitae
68. Advertisement for position placed in SCIENCE, copies of Seminar notices, and C.v.'s and letters of appointment
69. Complete list of Program course offerings
70. Reports

Reprints and Preprints removed

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STATEWIDE FAMILY PRACTICE RESIDENCY PROGRAM

ENVIRONMENTAL MEDICINE CURRICULUM COMMITTEE

ENVIRONMENTAL and OCCUPATIONAL MEDICINE LONGITUDINAL CURRICULUM MODULES

- 1 - Environmental and Occupational Medicine History
for Family Physicians**
- 2 - Communicating Environmental and Occupational
Risks to Patients: A Guide for the Family Physician**
- 3 - Environmental and Occupational Medicine
Resources for the Family Physician**
- 4 - Environmental and Occupational Medicine in Private
Practice: Choices for the Family Physician**
- 5 - Using Hospital Site Visits for Teaching
Environmental and Occupational Medicine**

Module 4

Environmental and Occupational Medicine in Private Practice: Choices for the Family Physician

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OBJECTIVES

The objectives of this lecture are to show why environmental and occupational medicine (EOM) is part of every day family practice and to present considerations for including EOM contracts with industry in the practice.



**ENVIRONMENTAL
and
OCCUPATIONAL
MEDICINE in
PRIVATE
PRACTICE:
CHOICES for the
FAMILY
PHYSICIAN**

Version 1.0

The objectives of this lecture are to show why environmental and occupational medicine (EOM) is part of every day family practice and to present considerations for including EOM contracts with industry in the practice.

**WHO PROVIDES
ENVIRONMENTAL
AND
OCCUPATIONAL
MEDICINE (EOM)
SERVICES FOR
INDUSTRY?**



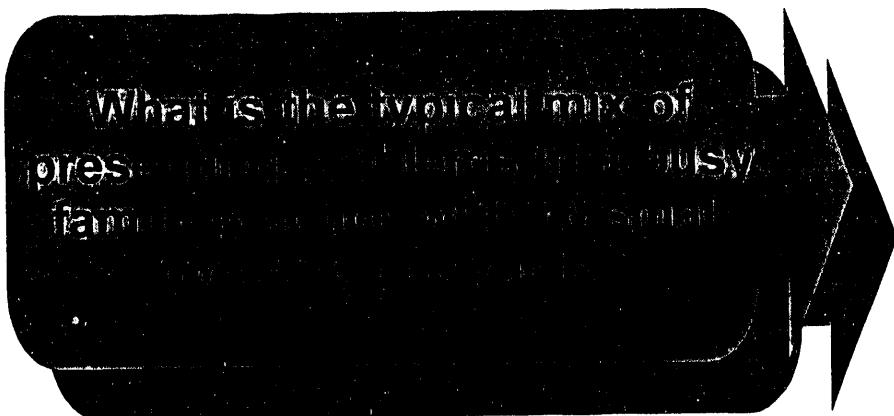
EOM SERVICES

**85% OF U.S. WORKERS ARE SERVED
BY PHYSICIANS OR HOSPITAL
AFFILIATED GROUP PRACTICES
THAT ARE NOT BOARD CERTIFIED
IN OCCUPATIONAL AND
ENVIRONMENTAL MEDICINE.***

*Description and Evaluation of Medical Surveillance Programs in General
Industry and Construction: Final Report. OSHA, US Department of
Labor July 1993.

This study summarizes survey data from all major industries in the U.S.
A total of 5,000,000 establishments were represented in the survey.

In case there is any doubt that there is a gap between the demand for EOM skills and services and the supply of specialists available, this study confirms the obvious fact that primary care practitioners are providing the vast majority of EOM services as part of their primary care practice.



This is a practical question for real-world practice in the community to provide guidelines for curriculum in medical education.

THE MIX* IS . . .

- 80% - 85% MUSCULOSKELETAL
- 10% - 15% ROUTINE FAMILY MEDICINE
- 1% - 2% STRESS & ADDICTION
- < 1% ESOTERIC (CHEMICALS, ETC.)
- < 1% ARBITRATION

**Personal communication with Dr. Ted Dunn, Beaufort, SC on 2/18/94.*

This estimate raises the question: Why would anyone choose to separate EOM as a discipline from the discipline of comprehensive, family-oriented, continuity-and-community oriented primary care?

This is an estimate from a veteran practitioner in a mid-size coastal community. This community is attracting small industries, tourist developments and is shifting from its traditional agricultural and fishing economy.

Of course, even "routine" family medicine is never wholly routine; the key is to know when to refer, when to consult, and how to help the patient obtain the best care possible.

EOM CONTRACTS IN PRIVATE PRACTICE - WHO DECIDES?

- **SELF IN SOLO**
- **PARTNERS IN GROUP PRACTICE**
- **HOSPITAL ADMINISTRATION**
- **LOCAL INDUSTRY INITIATIVE**
- **UNION INITIATIVE**

Any well trained, well staffed family practice will attract offers from industry and other third party payers for their services.

After a "trial" period, short-term commitments are likely to grow into longer term contracts.

Personnel directors (human resources) are key representative of corporate policy and are likely to seek you or your group practice as a health care provider.

IT DEPENDS ON:

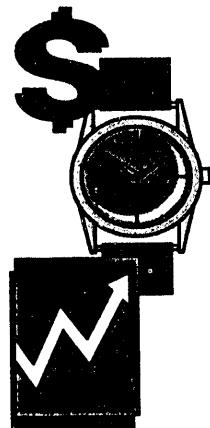
- **THE SIZE OF THE COMMUNITY**
- **THE SIZE OF THE INDUSTRY**
- **EARLY OR LATER STAGE OF THE PRACTICE**
- **WHETHER THE PRACTICE IS SOLO, GROUP, PART OF A NETWORK OR HOSPITAL**

Each community will influence the practice by its pattern of growth, economic development, or economic recession.

At an early stage of practice, the doctor(s) may choose to go slow, commit to short term contracts, to see how the relationship works out.

BENEFITS OF EOM CONTRACTS IN FAMILY PRACTICE

- **EOM PAYS WELL & PROMPTLY**
- **EOM HOURS ARE GOOD**
- **EOM SUPPLEMENTS REST OF THE PRACTICE**
- **REFERRALS FROM EMPLOYERS & EMPLOYEES**
- **INDUSTRY GROWS: EXPANSION**



Many practitioners in SC report positively on the benefits of affiliating with progressive industries in their communities.

Among the reasons are lack of bureaucratic red-tape associated with government, and reliable reimbursement in full for services rendered.

EOM challenges in an industry are likely to stimulate a physician to seek special training and to upgrade skills as part of his career development. Refresher courses are increasingly available and designed for busy primary care practitioners.

NEGATIVES OF EOM CONTRACTS IN FAMILY PRACTICE

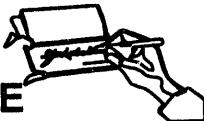
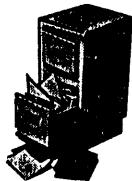


INDUSTRY FAILS: LOSS OF INCOME



HASSLE OF PAPERWORK

MEDICAL / LEGAL



MAY REQUIRE ADDITIONAL EXPENSE

Who can predict or measure the impact of a major industry employer going through a strike, a lay-off, downsizing or moving out of the community?

The shut down of the Navy Base in Charleston has been likened to several Hurricane Hugos in its impact on the working-age families of the Low Country.

Medical legal implications of practice in the community are part of the job of medicine today, and unlikely to diminish.

EOM IS A PART OF A FAMILY PRACTICE WITHOUT EOM CONTRACTS

- TREATING INJURED PATIENT/WORKER
- EMPLOYMENT PLACEMENT EXAM
- BACK TO WORK
- WORKERS' COMPENSATION
- WORK EXCUSE
- WORKING WOMEN
- JOB STRESS

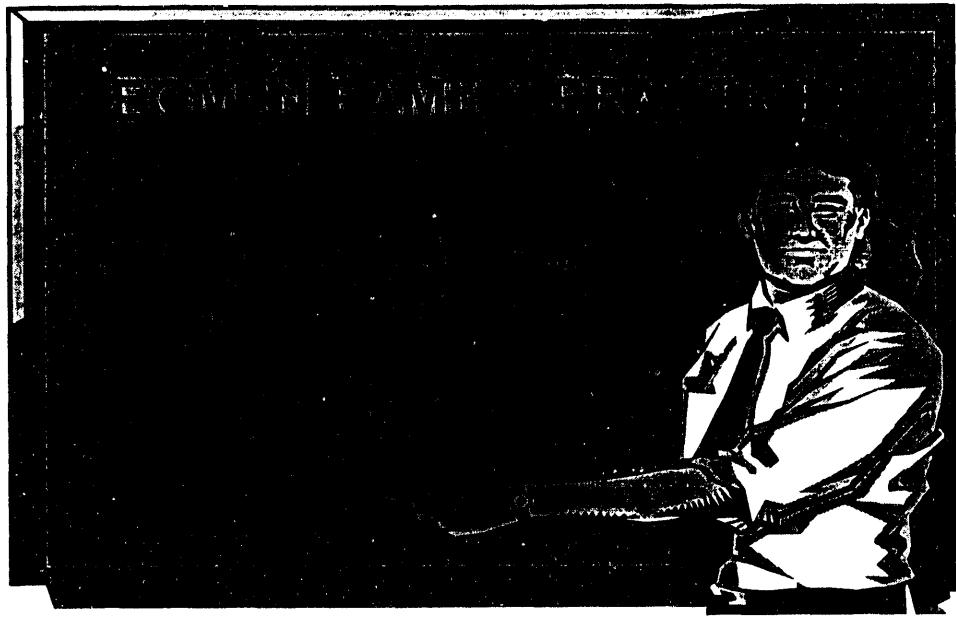


Each of these work related functions are part of daily ambulatory care and are inescapable.

Even without formal ties to industry, your practice will serve patients and families who look to their MD of choice for trust and second opinions.

A patient who comes in for a specific work related complaint, but brings up a different health concern must be informed that Workers' Comp will only pay for the work specific problem.

Under "managed care" and comprehensive, preventive health plans, some industries may take a more holistic approach to health maintenance for the 'healthy worker.'



Family practice physicians are well trained to manage most EOM problems. Specialization in EOM is not required to include EOM contracts with industry in the practice.

WHAT ARE THE TYPICAL DUTIES OF THE CONTRACTING PHYSICIAN?

- ✓ Screen prospective workers
- ✓ Periodically review physical condition of workers
- ✓ Evaluate physiologic requirements of jobs
- ✓ Health education and counseling
- ✓ Advise management on extent of medical program
- ✓ Treating injured / ill workers
- ✓ Work with on-site nurse and safety team
- ✓ Return to work

Prospective workers should be screened thoroughly for previous work history. Appropriate lab tests and other procedures should be performed. For example, if the patient is to be exposed to respiratory hazards, a baseline chest x-ray should be taken. The MD should decide what physical requirements are needed for the position and advise both the patient and management of the patient's suitability for the job.

The extent of the medical program depends on the hazards and degree of exposure, as well as management's commitment to prevention of work related and overall illness.

Injured workers may need to be evaluated for a worker's compensation claim. The generalist may have need to consult with an OEM specialist, the Workers' Compensation Board for the state or an experienced worker's compensation attorney.

An example of a frequent concern of the physician would be to approve a worker with adequate cardiopulmonary function for the routine task, but with inadequate cardiopulmonary reserves for wearing heavy protective equipment or surviving heat stress in a an accidental fire or fume situation.



An employer must now make a job offer before an employment physical examination can be done.

The Americans with Disabilities Act became law on July 26, 1992. As a result of the act, the employer must now make a job offer before a physical examination can be done.

The preemployment or preplacement examination is now referred to as the employment entrance examination.

The employment placement examination has three goals: to assess the prospective employee's physical and emotional capacity to perform the duties of the job being offered; to establish a baseline record of the individual's current physical condition for future epidemiological study or medicolegal action; and to assess the prospective employee's general health.

THE PATIENT/WORKER WHO MALINGERES: A RECURRING PROBLEM

- WHO OWNS THE PROBLEM?
- GIVE EACH PATIENT BENEFIT OF THE DOUBT.
- CAN MD AFFORD TO BECOME CYNICAL?
- REFERRAL?



Disability income, the sympathy of family and co-workers, the freedom from work responsibility and the use of the illness or injury to financially punish the company are possible reasons for patient malingering.

As a general rule, it is best to get the patient back to work as soon as possible. Effective communication with the employer is instrumental. The "Ability" or "Work Recommendation" form should be completed in detail and geared to the recipient - management or a medical professional.

A series of malingers in the same week can adversely affect morale and strain the empathy you and your staff.

Keep in mind that job dissatisfaction or job stress from unfair supervisors can trigger a chain reaction of complaints - conscious or involuntary.

"Defensive" medicine takes on a special meaning when confronted with a worker who comes back repeatedly for low-back pain without improvement. Some EOM specialists have developed a "rule of three." Three visits without improvement indicates a prompt referral to the specialist (orthopedist) or to work-hardening programs.

The timing of the referral is art and science; example: some physicians refer low back syndrome patients after three office visits if an improvement is not observed.



THE MD CAN HELP THE PATIENT TO . . .

- **ADAPT AND COPE BETTER**
- **KEEP CONCERNs IN PERSPECTIVE**
- **STRIVE FOR JOB SATISFACTION**

The MD can be the key in preventing the patient from becoming overly comfortable with disability income, sympathy, freedom from work and with the idea of punishing the company.

The MD can alert someone responsible (in progressive management) that there has been a change in work-related complaints, for the worse, or for the better

The on-site nurse is in a strategic position to observe changes in behavior.

RETURNING TO WORK FOLLOWING BACK INJURY: ONE CORPORATION'S POLICY*

**HOME INJURY: DO NOT RETURN TO WORK UNTIL
FULLY RECOVERED.**

**WORK INJURY: RETURN AS SOON AS POSSIBLE
FOR LIGHT DUTY.**

**WHY: THE COMPANY'S INSURANCE PREMIUMS
INCREASE FOR WORK RELATED INJURIES, BUT
NOT FOR HOME RELATED INJURIES.**

** Personal communication with Dr. Ken Nunnery, Fort Mill, SC. 2/94*

Insurance premiums to the industry are tied to accident-and-injury, absenteeism and lost-time records.

Most companies have someone who works as the "safety officer" who monitors use of safety equipment, and tries to promote a climate of pride and teamwork in the plant's safety record.

Health insurance companies are experimenting with incentives, including rebates, for health-promoting behaviors.

For example, work hardening programs will be paid for by the company, but rehabilitation for a sports injury is unlikely to be covered.

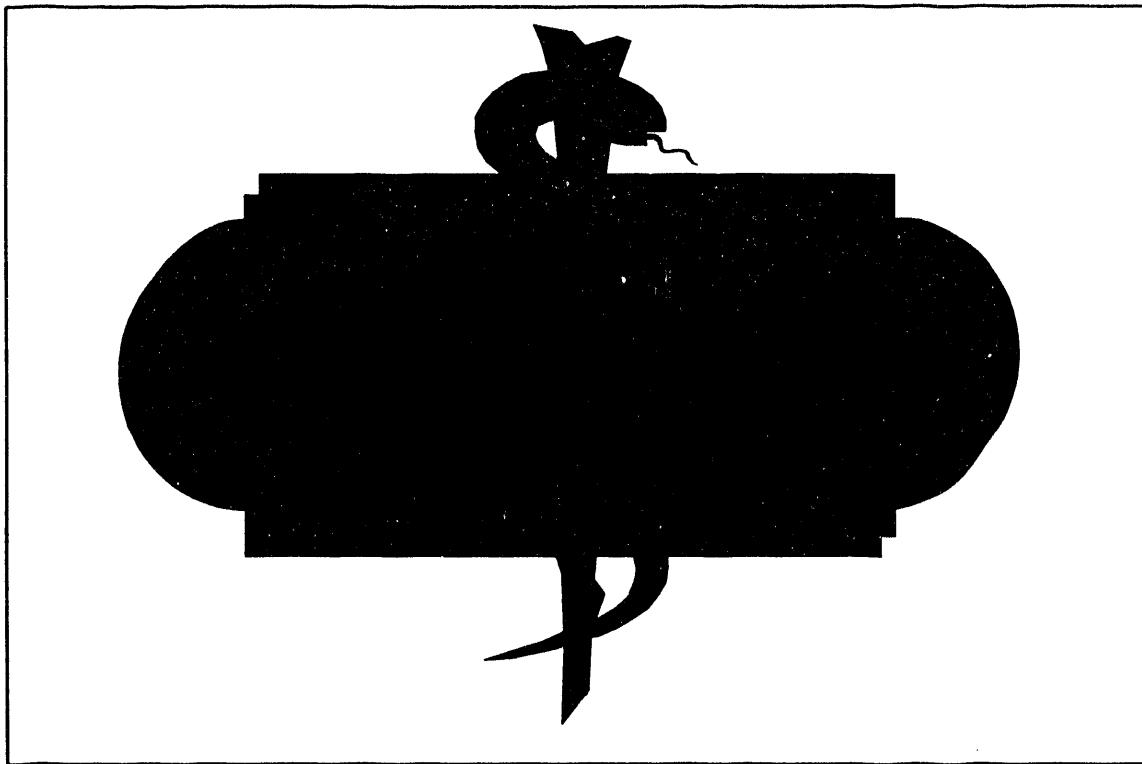


- 1. Are the signs and symptoms consistent with the diagnosis?**
- 2. Is the temporal relationship of exposure/disease clear?**
- 3. Do co-workers have similar problems?**
- 4. Is workplace monitoring data available and indicative of the suspected exposure?**
- 5. Is the condition biologically plausible and confirmed?**
- 6. Can nonoccupational exposure to the toxic agent be ruled out?**

* Zenz C. (ed.) *Occupational Medicine: Principles and Practices* 3 rd ed. (1994)

Determining a work related illness or injury can challenge experienced EOM physicians. These six questions will help guide you in your analysis.

This national expert emphasizes several of the WHACS questions as well as use of monitoring information and concern over the non-occupational exposure which cannot be ruled out unless and until the history is investigated in detail.



Available, competent medical services are important in attracting industry to a community. You are part of the attraction.

GROUP PRACTICE APPROACH TO EOM CONTRACTS



- 4 - 5 PEERS CAN MARKET SERVICES TO A NUMBER OF LARGE COMPANIES
- EACH OF THE PEERS CAN SUB-SPECIALIZE IN SKILLS AND EXPERTISE
- GROUP PRACTICE IS ATTRACTIVE TO INDUSTRY

Group practice is increasingly attractive to professional providers and to third-party consumers of their services.

With time, most primary care doctors develop one or more special interests (sports medicine, women's health, stress management, geriatrics, etc.). Industry may encourage your special interest with travel and tuition for continued medical education.

Refresher courses to keep up with a variety of areas of EOM are recommended.

COMPETENT EOM TEAM FOR FAMILY PRACTICE



ADMINISTRATIVE ASSISTANT



OCCUPATIONAL RN



INDUSTRIAL HYGIENIST



PHYSICAL THERAPIST

Depending upon the number of contracts with local industry, a physician may have need for either a full time or part time administrative assistant whose duties are solely directed to EOM. This person's duties include all paperwork for the employers' insurance, workers' compensation and responding to subpoenas on behalf of the practice. The assistant is most likely to maintain regular contact with the company's personnel director representing the practice and responding to corporate initiatives.

The occupational nurse is usually employed on site at the plant. In addition to advising management on health concerns, the nurse provides selected physical examination services, manages minor trauma, serves as liaison with the contracting physician, maintains medical records on site, provides health training to employees, develops information on suspected EOM illnesses and administers the drug testing program.

An industrial hygienist is a valuable member of the OEM team. The services of this specialist may be available to the contracting physician if the business is a subsidiary of a larger corporation or by the company's insurance carrier. The physician may have need to contract the services of a hygienist if one is not provided by the company.

A physical therapist may already be a part of the family practice team for geriatrics, sports medicine or worker rehabilitation.

WHAT IS THE ROLE OF THE ON-SITE NURSE?

- DEPENDS ON THE SIZE OF THE PLANT
- OBSERVE WORK BEHAVIOR PATTERNS
- MANAGE MINOR TRAUMA
- RESPONSIBLE FOR DRUG SCREENING
- MAINTAIN FILES FOR THE PHYSICIAN



The nurse may also help plan and train the company's EMT team.

As in other branches of nursing, there is a national movement to emphasize expanded responsibilities (prescribing, primary care, etc.). Perhaps the analogy here is to nurse midwives versus obstetrics by family physicians.

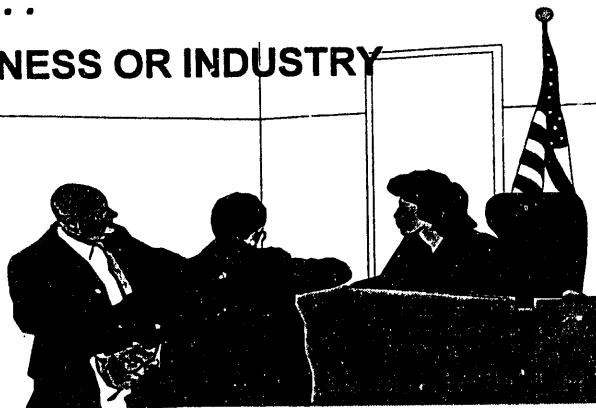
The medial-legal implications of the nurse-occupational medicine-practitioner are not clear. As in other legal questions, this may depend on state statute.

Nationwide, nurse practitioners are focusing more on ergonomics, physical therapy, and rehabilitation as a cost beneficial service to the worker and to management. Teamwork with the physician would strengthen such efforts.

DOES THE FAMILY PRACTICE WITH EOM CONTRACTS NEED LEGAL REPRESENTATION?

***Your own attorney may be necessary to deal with
lawyers representing . . .***

- **CONTRACTING BUSINESS OR INDUSTRY**
- **EMPLOYEE'S UNION**
- **HOSPITAL**
- **PATIENT**



Today, who can practice without access to skilled and trusted legal advice, before (not after) the problem arises?

Just like physicians, lawyers recommend preventive consultation rather than after the fact with most problems.

INDUSTRY CONTRACTS AND THE FAMILY PHYSICIAN



The physician works for the patient, regardless of who is paying the bill. The MD is not an agent of the industry, and should not be perceived as such by the community. One method to secure the trust and respect of the community is to offer discounted services to non-profit organizations such as free physical exams for boy and girl scouts, churches and schools.

In the long run, enlightened management in industry also appreciate the trust and respect placed in the physician by the community as a whole.

EOM CONTRACT: ROLE OF PLANT MANAGEMENT

**DEPENDENT ON CORPORATE POLICY
-PROGRESSIVE OR REGRESSIVE**

**DEPENDENT ON UNION / NON-UNION
RELATIONS**

INCENTIVES FOR PRODUCTIVITY

INCENTIVES FOR TEAMWORK

DRUG SCREENING POLICY

NEW TECHNOLOGY / SHIFT WORK



Management must be committed if there is to be a successful health & safety program. This is demonstrated by showing an interest in the EOM program equal to production and profits.

Lost time and disability costs are being recognized as beyond the tolerable costs of the product; such costs come directly out of the profit margin of the industry; they are not tax deductible such as purchase of equipment or renovations.

CONTRACTS WITH INDUSTRY

THE PHYSICIAN MUST LEARN WHEN TO SAY:

- ➡ **YES**
- ➡ **MAYBE**
- ➡ **NO**



You may need to base your decision on a number of subjective factors. First, are any of your patients employed by that business? If so, their degree of job satisfaction, as elicited by WHACS, may be a good indicator of management's policy. How is the industry perceived in the community is another good question to ask. Is the industry a good corporate citizen? Does it support community charities and projects with donations and time off for employees? A review of the industry's medical policy and records of on-the-job accidents may be your best indicator. You can judge for yourself if the medical policy is progressive and whether it treats all employees fairly. The accident records will give you an indication of management's commitment to safety and accident prevention. Does the industry have a full-time safety officer? Does the industry have an accident review committee empowered to make recommendations for administrative, mechanical or behavioral changes to prevent that type of injury in the future? Does management act on the recommendations?

A regressive industry will frustrate your efforts to provide the best care for their employees. Low employee job satisfaction and lack of support for community charities and projects are clear indicators of a regressive industry. What about the industry's medical policy? If it does not treat all employees fairly or if return to work guidelines seem arbitrary, you, as the physician for that industry, can expect difficulties with management.

When to say "maybe" is a choice to make when the indicators are not clear as to whether the company is progressive or not. When you are not sure about entering into an EOM contract with an industry, negotiate for a six months contract rather than for a longer commitment. This is ample time for both you and management to assess each other.

EOM CONTRACTS WITH SMALL BUSINESS

- ♦ **EXPECT GUIDANCE FROM THE
CORPORATE HQ IF BUSINESS IS A
SUBSIDIARY**
- ♦ **MORE FLEXIBILITY WITH AN INDEPENDENT
BUSINESS**
- ♦ **IF INDEPENDENT BUSINESS, PHYSICIAN
HELPS TO WRITE MEDICAL POLICY**

Small business is more likely to contract with a generalist rather than with an OEM specialist. The physician has more latitude in services to be provided than he would with a larger business that has corporate mandated policies.

The contract should specify the duties expected of the contracting physician and the remuneration. It may be to the benefit of the practitioner to be put on salary in order to receive company benefits.

Instructions should be written and provided to all employees covering referral to the office for non-emergencies as well as for pre-employment exams, return to work check-ups and for periodic monitoring. Such instructions and tips for health promotion can be part of ongoing revision, update and improvement in health behaviors.

WHEN SHOULD THE PHYSICIAN MAKE SITE VISITS TO A CONTRACTING BUSINESS OR INDUSTRY?

- 1. AT THE ONSET OF THE CONTRACT**
- 2. TO UNDERSTAND A PATIENT OR SERIES
OF PATIENTS**
- 3. AT LEAST ANNUALLY HAVE A WALK
THROUGH TO KEEP UP WITH CHANGES**

Plant visits take time, but in the long run are productive. Visits show the employees you care about them and show management that you are interested in the work environment. Both tend to bring more business to the practice.

Most plant managers will bend over backwards to make your visit as efficient and relevant to health and safety as possible.

A concerned on-site occupational nurse may request a visit to a particular area of concern.

DILEMMA OF CONCEALMENT DURING A PRE-EMPLOYMENT EXAM

One month after you approved an employee for a job at a pesticide formulating plant, he consults with you because of his concern over exposure to anticholinergic chemicals. He explains that his mother had been diagnosed as cholinesterase susceptible after having a severe reaction to a preoperative muscle relaxant. When hired, he was not told that he would be exposed to anticholinesterase chemicals.

- **What would you do now?**
- **What would you tell the patient?**
- **What would you tell management?**

The first step is to repeat the plasma and RBC cholinesterase (ChE) blood analyses which are included in the pre-employment physical. You check his chart for the pre-employment lab results and see that they were normal, but were in the lower range. You question the patient about his exposure to organophosphate and carbamate insecticides (ChE inhibitors) during the past month and his use of protective clothing. This information will help you interpret the current lab analyses.

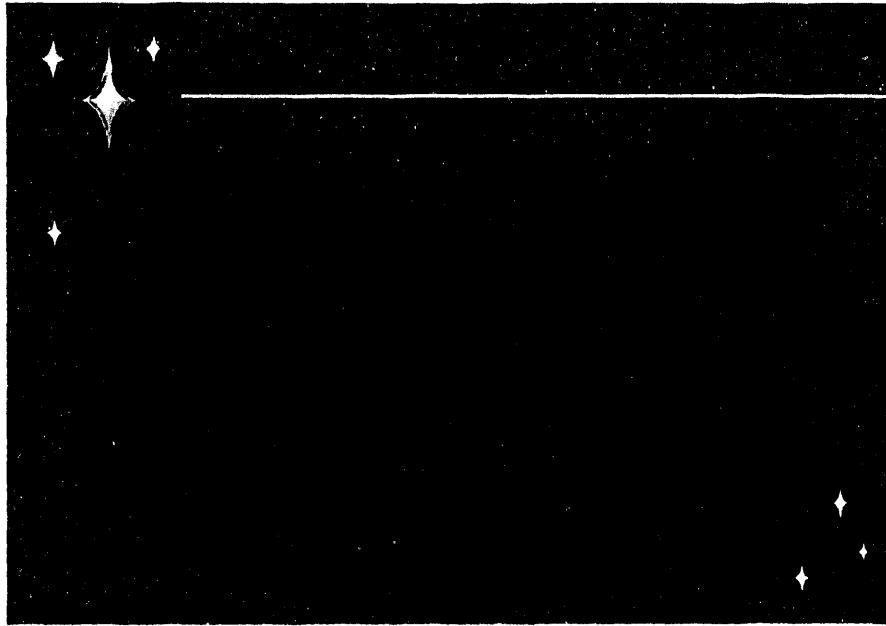
You reassure the patient and explain that if he has genetically low ChE, the first blood test would probably have been below normal limits. If the patient uses the company-provided protective clothing and follows safety regulations, he should have no problem even if he does have genetically low ChE. Additionally, the ChE analyses done on all employees every other month will enable you to track his levels.

The ChE results will be back within a week. You will wait until then to talk to management. If it is low again, the patient may have genetically low ChE. This should not prevent him from staying on the job as long as he uses protective clothing and equipment and follows safety regulations. Management may want to switch the employee to a different production line where he would perform the same work, but not be exposed to anticholinesterase chemicals.

Which of the following best illustrates the dilemma case history?

1. Workers, who have special risks for a particular job, should not be hired.
2. The importance of the employment entrance examination & asking specific questions about preexisting medical conditions that may place the worker at greater risk for a particular job.
3. The importance of immediately informing management about a potential problem.

2 is correct.



Private practice may also provide learning experience, preceptors for
medial students, nurses, pharmacists from the university.

EOM skills can be upgraded with CME course work.



- ✓ EOM IS PART OF FAMILY PRACTICE.
- ✓ THE PRACTITIONER DECIDES EXTENT OF EOM CONTRACTS IN THE PRACTICE.
- ✓ FAMILY PRACTICE PROVIDES A TRUSTWORTHY SERVICE TO THE COMMUNITY.

No field of medicine is more dynamic than family practice.

EOM improvement is a natural for the busy family practitioner who sees the household as a unit of bio-psycho-social determinants of health; the rise of working women and two and three paycheck households has erased the artificial boundaries of work versus home environments.

"Managed Care" has been pioneered in most communities by progressive industries and efficient health care providers. This can and should be a win-win situation for the physician, worker and company.

CREDITS

**This lecture was developed under the auspices
of the Environmental Medicine Curriculum
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STATEWIDE FAMILY PRACTICE RESIDENCY PROGRAM

ENVIRONMENTAL MEDICINE CURRICULUM COMMITTEE

ENVIRONMENTAL and OCCUPATIONAL MEDICINE LONGITUDINAL CURRICULUM MODULES

- 1 - Environmental and Occupational Medicine History
for Family Physicians**
- 2 - Communicating Environmental and Occupational
Risks to Patients: A Guide for the Family Physician**
- 3 - Environmental and Occupational Medicine
Resources for the Family Physician**
- 4 - Environmental and Occupational Medicine in Private
Practice: Choices for the Family Physician**
- 5 - Using Hospital Site Visits for Teaching
Environmental and Occupational Medicine**

Module 5

USING HOSPITAL SITE VISITS FOR TEACHING ENVIRONMENTAL AND OCCUPATIONAL MEDICINE

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USING HOSPITAL SITE VISITS FOR TEACHING ENVIRONMENTAL AND OCCUPATIONAL MEDICINE



Version 1.0

- The objectives of this presentation are to:

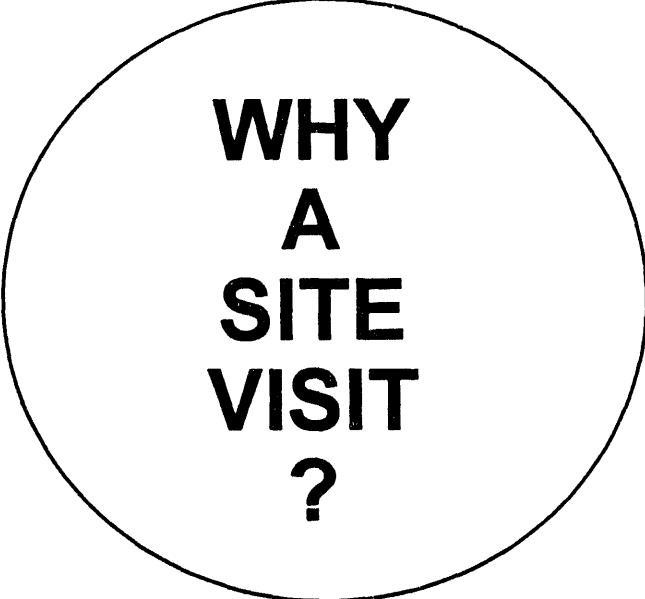
- 1. Give the family physician an overview and components of a site visit.
- 2. Show how the hospital can be used to effectively teach this concept to Family Medicine residents.
- 3. Look at the various environments and hazards that a hospital employee might face.
- 4. Use case histories to illustrate specific points.

- A summary and test questions are also included.

CASE HISTORY: PENICILLIN ALLERGY

- YOU ARE DOING A PRE-EMPLOYMENT PHYSICAL ON A NEW PATIENT, RALPH POTTS. MR. POTTS HAS JUST ACCEPTED A JOB AS A MAINTENANCE WORKER AT THE LOCAL MEDICAL COLLEGE.
- DURING THE EXAM, MR. POTTS TELLS YOU THAT HE IS SEVERELY ALLERGIC TO PENICILLIN.
- DOES HIS ALLERGY TO PENICILLIN PRESENT ANY SPECIAL PROBLEMS AT HIS NEW WORKSITE?

•Only if there is a possibility that he may come into contact with “airborne” penicillin. Because most syringes are now drawn under laminar flow hoods, airborne penicillin is unlikely.



**WHY
A
SITE
VISIT
?**

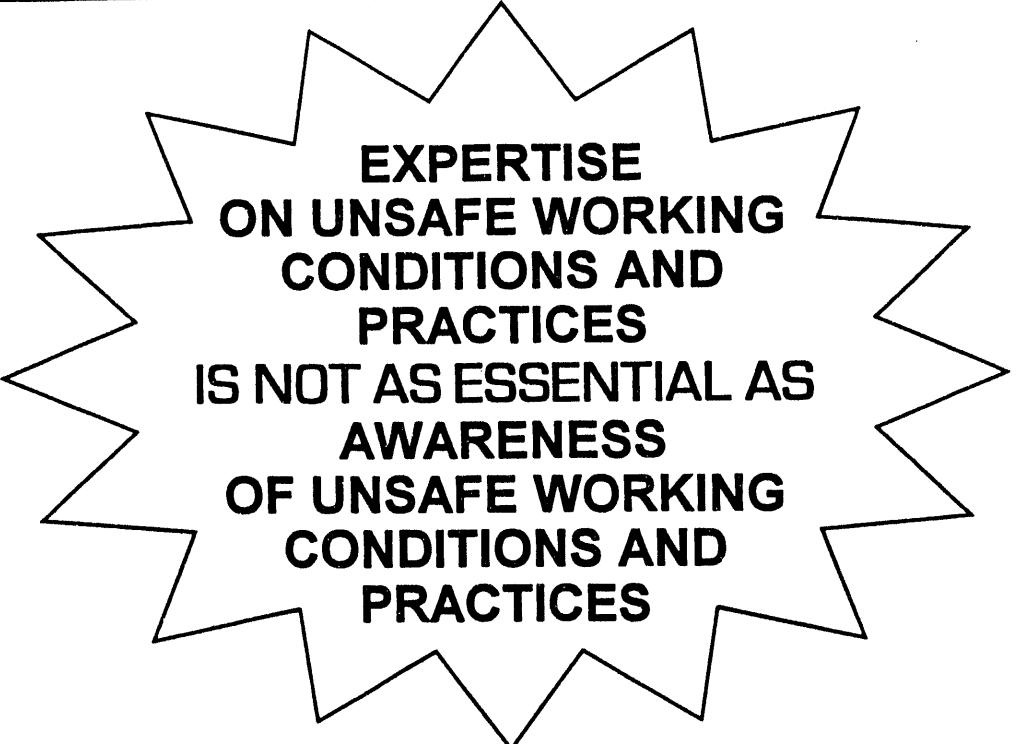
- Do you know how valuable a site visit can be?

BECAUSE A SITE VISIT IS AN:

**ESSENTIAL ELEMENT OF THE
OCCUPATIONAL MEDICINE
COMPONENT OF FAMILY MEDICINE**

- **FOR FAMILY MEDICINE RESIDENTS**
- **FOR FAMILY MEDICINE PHYSICIANS**

- During his practice, a Family Medicine Physician can expect to encounter patients with workers' compensation injuries.
- At that point, the physician has two customers: the patient and the business/industry for who the patient works.
- With the current trend towards capitated reimbursement, rather than fee-for-service, it makes sense for the primary care physician to assist the business/industry in preventing injuries and illness within the employees work environment.



**EXPERTISE
ON UNSAFE WORKING
CONDITIONS AND
PRACTICES
IS NOT AS ESSENTIAL AS
AWARENESS
OF UNSAFE WORKING
CONDITIONS AND
PRACTICES**

- It is not necessary to become an industrial hygiene or ergonomic expert.
- Most unsafe working conditions and unsafe work practices are easily recognized if the physician has a basic understanding of the worksite function and the individual or unit operations within the operation.
- The physician's familiarity with his patient's workplace will help provide him (the MD) with a better understanding of the work environment he is sending his patient back into.

SITE VISITS PROVIDE YOU WITH:

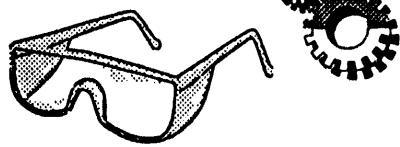
FIRST-HAND KNOWLEDGE OF YOUR PATIENT'S "REAL-WORLD" OCCUPATIONAL RISKS

- WORK CONDITIONS**
- RISKS--OR LACK OF RISKS**
- JOB REQUIREMENTS**

- What kind of environment does your patient work in?
- What unique hazards does he face?
- What common hazards does he face?
- What, exactly, does your patient do? REMEMBER WHACS.

**AFTER A SITE VISIT YOU MAY BE ABLE
TO HELP PREVENT OR MINIMIZE
EXPOSURES BY SUGGESTING:**

- ⇒ ADMINISTRATIVE CONTROLS
- ⇒ ENGINEERING CONTROLS
- ⇒ BEHAVIOR MODIFICATION



- Rules and regulations.
- Equipment modification.
- Protective equipment (i.e. safety glasses and hearing protectors) and safety classes.

WHY A HOSPITAL INSTEAD OF A FACTORY ?

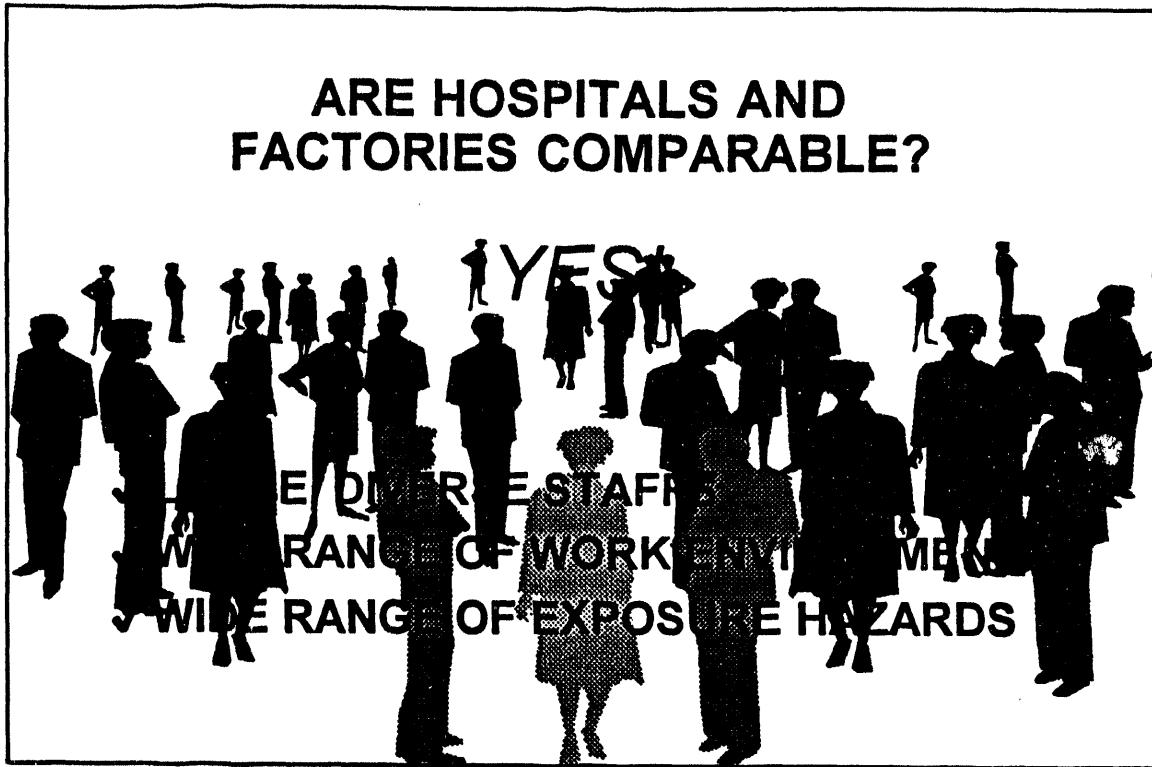
- What are the advantages of using the hospital as a site visit instead of a factory?

**✓ BETTER ACCESSIBILITY
FOR RESIDENTS**

**✓ GREATER ABILITY TO
FOCUS ON ASSOCIATED
HEALTH PROBLEMS**

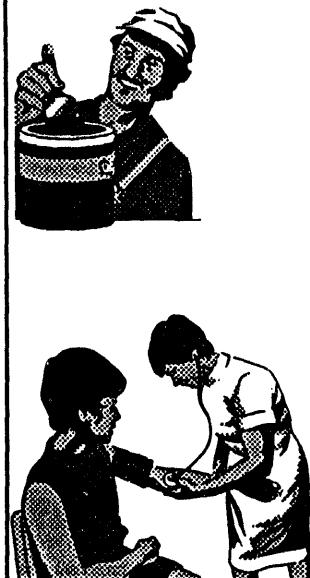
- 1. Better accessibility for residents means more time for touring different work environments.
- 2. Because the residents are more familiar with the work environment, they have a GREATER ABILITY TO FOCUS ON ASSOCIATED HAZARDS OR HEALTH PROBLEMS.

ARE HOSPITALS AND FACTORIES COMPARABLE?



- Medical, paramedical, technical, auxiliary, etc.
- Operating room, wards, laboratories, offices, physical plant, etc.
- Physical, biological, chemical, psychological.

LARGE, DIVERSE STAFFS



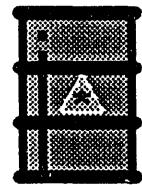
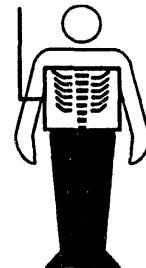
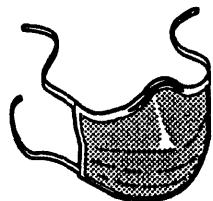
- MEDICAL
- NURSING
- PARAMEDICAL
- TECHNICAL
- CLERICAL
- PHYSICAL PLANT
- AUXILIARY PERSONNEL

• The staff of a hospital is comparable, in terms of size and diversity, to that found in a large factory. There may be a considerable degree of overlap between worker's jobs.

ARE YOU FAMILIAR WITH THESE HOSPITAL ENVIRONMENTS?



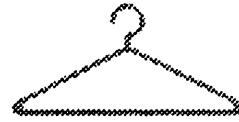
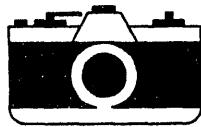
- PHARMACY
- PATIENT ROOMS AND WARDS
- OPERATING ROOMS
- HAZARDOUS WASTE STORAGE
- CENTRAL STERILE PROCESSING
- X-RAY



- Although a hospital staff member may spend most of his time in one work environment, he is likely to pass through other work environments (and exposure hazards) during the course of his day

ARE YOU FAMILIAR WITH THESE HOSPITAL ENVIRONMENTS?

- RESEARCH LABORATORIES
- FOOD SERVICES
- LINEN SERVICES
- INCINERATOR AND BOILER ROOMS
- OFFICES
- PRINT SHOP



• Although someone might be familiar with the exposure hazards found in his primary working environment, he may be unaware of hazards in places he goes to infrequently.

CASE HISTORY: ETHYLENE OXIDE

- YOUR PATIENT, ELSA GREER, HAS WORKED IN THE CENTRAL STERILE PROCESSING UNIT OF THE LOCAL HOSPITAL FOR THE PAST FIVE YEARS.
- ELSA JUST FOUND OUT THAT SHE IS PREGNANT AND NOW HAS SOME QUESTIONS ABOUT HER WORKING CONDITIONS.
- ETHYLENE OXIDE EXPOSURE IS HER BIGGEST CONCERN.

- Ethylene oxide has been linked to an increased risk of spontaneous abortion.
- OSHA has set exposure limits for ethylene oxide.
- Personal monitoring badges are available.

WIDE RANGE OF EXPOSURE HAZARDS

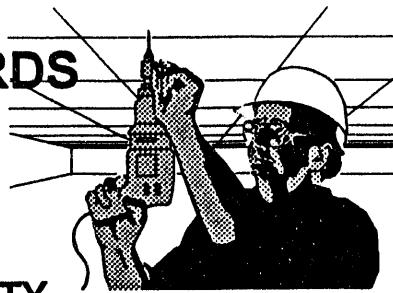
- **PHYSICAL**
- **CHEMICAL**
- **BIOLOGICAL**
- **PSYCHOLOGICAL**
- **OTHER**

- The exposure hazards in a hospital are as diverse as the work environments.

PHYSICAL HAZARDS



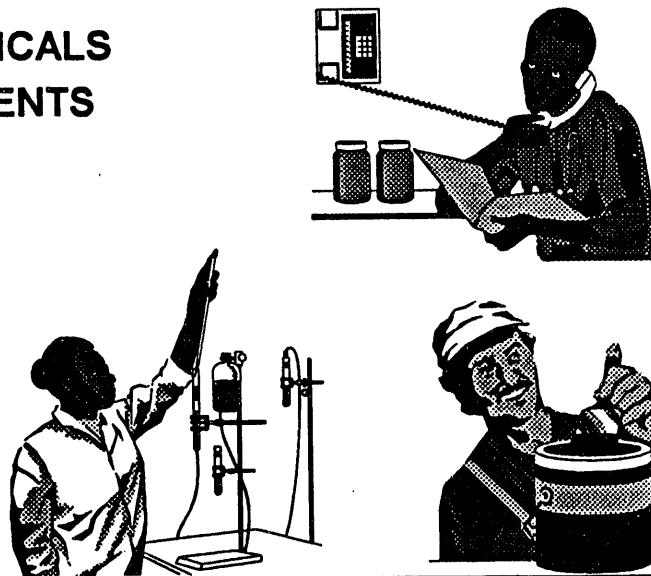
- NOISE
- CUTS
- LIGHT, HEAT, HUMIDITY
- BURNS: HEAT AND CHEMICAL
- ELECTRICAL HAZARDS
- MACHINERY HAZARDS
- RADIATION: UV, X-RAY, ISOTOPE



- NOISE: workshop, kitchen, laundry
- LIGHT, HEAT, HUMIDITY: Workshop, operating room, laundry, kitchen, offices
- ELECTRICAL HAZARDS: Workshop, operating room, laundry, kitchen, X-ray
- MACHINERY: Workshop, laundry, kitchen
- CUTS: Workshop, operating room, kitchen
- BURNS: Workshop, operating room, laundry, kitchen
- RADIATION: Workshop, operating room, X-ray, wards

CHEMICAL HAZARDS

- DARKROOM CHEMICALS
- PAINTS AND SOLVENTS
- DRUGS
- GASES
- DUST
- PESTICIDES
- DETERGENTS
- WELDING FUMES

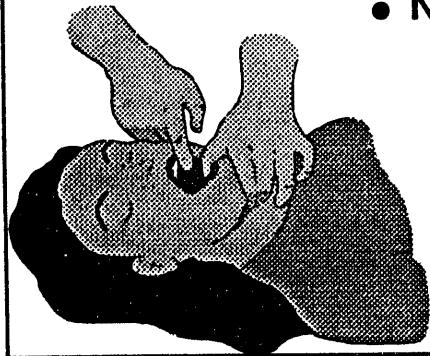
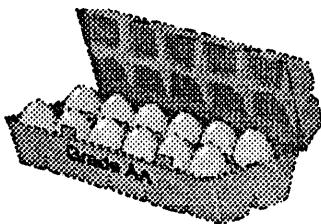


- DRUGS: Pharmacy, wards
- GASES: Sterilizing room, operating room
- PESTICIDES: Groundskeepers
- DETERGENTS: Workshop, operating room, laundry, kitchen, wards
- PAINTS AND SOLVENTS: Workshop
- DARKROOM CHEMICALS: X-ray
- DUST: Workshop, laundry
- WELDING FUMES: Workshop

BIOLOGICAL HAZARDS



- AIRBORNE
- CONTACT
- FOODBORNE
- NEEDLE STICKS



- AIRBORNE: Workshop, kitchen, wards, X-ray
- CONTACT: Workshop, operating room, laundry, wards
- FOODBORNE: Kitchen
- NEEDLESTICKS: Wards, hazardous waste room

PSYCHOLOGICAL HAZARDS

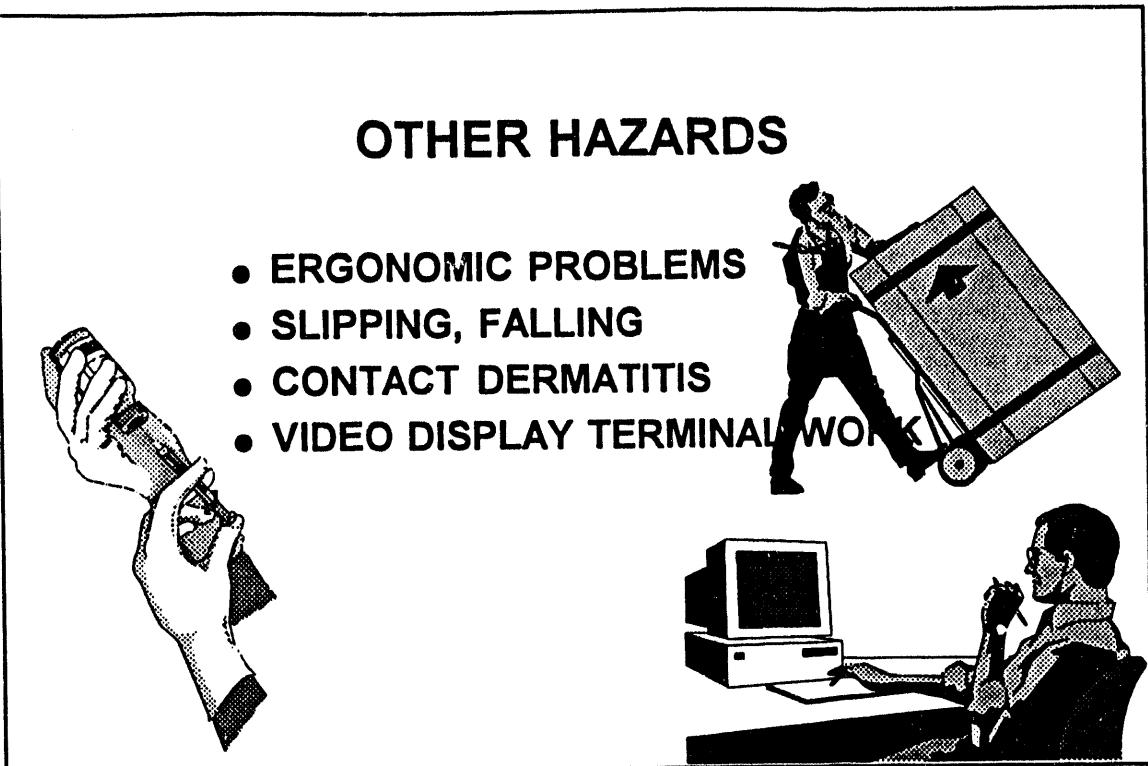
● STRESS

- LIFE AND DEATH RESPONSIBILITIES
- LONG HOURS
- SHIFT WORK
- HIGH RISK ENVIRONMENT
- INTERACTION WITH EMOTIONAL PUBLIC

- STRESS: All hospital workers are subject to stress from
 - their many exposure hazards
 - responsibilities
 - dealing with sick people and their families

OTHER HAZARDS

- ERGONOMIC PROBLEMS
- SLIPPING, FALLING
- CONTACT DERMATITIS
- VIDEO DISPLAY TERMINAL WORK



•Other exposure hazards that hospital employees might face include:

- Shift work
- VDT's
- Ergonomic problems
- Lifting, slipping, falling
- Contact dermatitis

OTHER SIMILARITIES BETWEEN FACTORIES AND HOSPITALS

- OPEN 24 HOURS
- OPEN DURING CRISES
- EVER CHANGING TECHNOLOGY
- LARGELY SAME-SEX EMPLOYEES

- Many large factories and all hospitals are open 24 HOURS A DAY. Shift work related problems and increased stress are a result.
- Many large factories and, of course, hospitals are unable to shut down completely during a crisis (earthquake, hurricane, tornado). Workers may be additionally stressed by personal concerns over family and property.
- Factory workers and hospital employees are often faced with learning new technology and becoming familiar with any accompanying hazards.
- Factories and hospitals are often staffed, in whole or in part, by groups of same-sex employees (i.e. physical plant workers are typically male, laundry room workers are typically female). Hazards unique to same-sex employees (i.e. pregnancy concerns) have to be dealt with.

ADVANTAGES OF USING THE HOSPITAL FOR A SITE VISIT

- **COST EFFECTIVE**
- **ACTIVE PARTICIPATION**
- **FAMILIARITY AND INVOLVEMENT**
- **ACCEPTANCE BY STUDENTS AND STAFF**
- **ACCURATE REPRESENTATION OF THE WORKING ENVIRONMENT**
- **GOOD PREPARATION FOR USING THE FACTORY AS A FUTURE SITE VISIT**

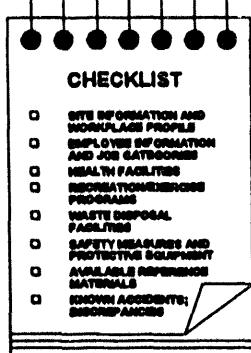
- Highly cost effective in terms of net teaching time, mainly because residents are “at home” and have already been acquainted with the general layout. Also no travel time or “hospitality rites” time.
- Small groups promote active participation; factory tours are largely passive.
- Only brief guidelines are necessary in this familiar environment; can draw upon previous experiences in the environment to aid in learning.
- Residents and staff like using the hospital for a site visit.
- The hospital is a good role model of the modern working environment in that it represents both service and production industries.

COMPONENTS OF A HOSPITAL SITE VISIT

- **PRE-WALK-THROUGH MEETING**
- **DISTRIBUTION OF INFORMATION PACKET**
 - WALK-THROUGH CHECKLIST
 - MSDS
 - OSHA "200" LOG
 - CODE OF FEDERAL REGULATIONS
 - OTHER EMPLOYER RECORDS
- **THE WALK-THROUGH**
- **CLOSING MEETING**

- Meet with residents to introduce the topics of Occupational Health and The Value of a Site Visit; also hand out information packet which includes:
 - **WALK-THROUGH CHECKLIST**- a list of things to be aware of in the workplace.
 - **MSDS**-review the sample MSDS for sections which will provide helpful information to the physician when seeing a patient who has had a chemical exposure (reminder: don't forget to request the appropriate MSDS from the employer when your patient has a chemical exposure.)
 - **OSHA "200" LOG**-details employer's injury and illness reporting requirements from a legal and a productivity standpoint.
 - **CODE OF FEDERAL REGULATIONS**-additional information on the employer's responsibilities.
 - **EMPLOYEE RECORDS**-lists other types of records an employer is required to keep with regard to employee health and safety issues.
- Take small groups through familiar and unfamiliar areas of the hospital. The group leader can "role model" for the residents during the tour by asking questions or pointing out changes or needed changes.
- Reassemble groups and compare impressions.

THE WALK-THROUGH CHECKLIST

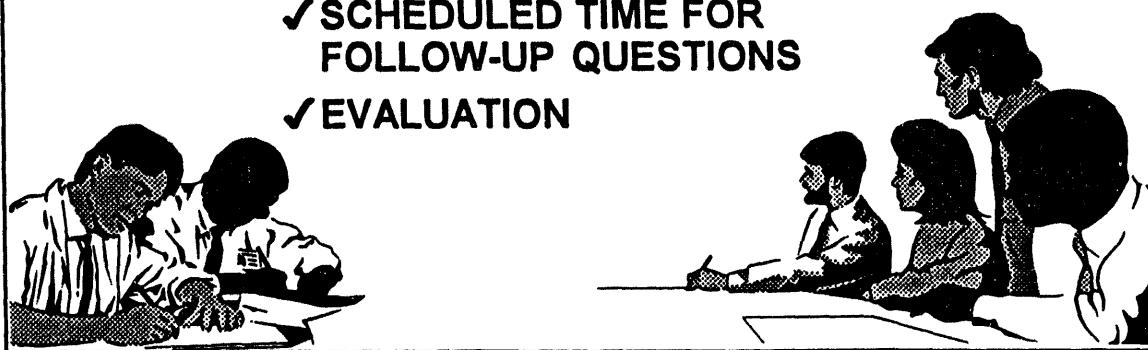


- SITE INFORMATION AND WORKPLACE PROFILE
- EMPLOYEE INFORMATION AND JOB CATEGORIES
- HEALTH FACILITIES
- RECREATION/EXERCISE PROGRAMS
- WASTE DISPOSAL FACILITIES
- SAFETY MEASURES AND PROTECTIVE EQUIPMENT
- AVAILABLE REFERENCE MATERIALS
- KNOWN ACCIDENTS; DISCREPANCIES

- Walk-through checklists are valuable as a teaching tool (for residents) and as an evaluation tool (for contracting physicians)
- To save time, some information can be completed in advance by telephone or correspondence. Other information requires note taking while touring the worksite.
- The walk-through checklist can serve as a reminder of worksite conditions and hazards:
 - to the resident when he writes up one noted hazard for his coursework.
 - to a contracting physician if he provides a written evaluation of the visited facility. (A written evaluation should include perceived hazards that might cause patients to need specific health maintenance and monitoring by laboratory tests.)

ADDITIONAL COMPONENTS OF A HOSPITAL SITE VISIT: For the Family Medicine Resident

- ✓ WRITTEN PAPER COVERING ONE HAZARD NOTED DURING THE SITE VISIT
- ✓ SCHEDULED TIME FOR FOLLOW-UP QUESTIONS
- ✓ EVALUATION



- Written paper covering one hazard noted during the site visit with recommendations on how to eliminate or reduce its risk by administrative, engineering and/or behavioral controls.
- Scheduled time with the instructor for follow-up questions, discussion of the written paper and evaluation of the tour.

DOES USING A HOSPITAL FOR THE SITE VISIT ACHIEVE THE TEACHING GOAL?

YES!

Research indicates, based on the oral examinations at the end of the clerkship, that the students gained an awareness and understanding of the interrelationships of work and health.¹

¹Ben-David A, Notzer N. Using hospital site visits for teaching occupational health. Academ Med 1989; 64(6): 327-329.

- Although the data, thus far, is limited, residents' response to the program has been favorable.

CASE HISTORY: BACK PAIN

- **YOUR PATIENT, LIZA MOSER, IS CONCERNED ABOUT HER CHRONIC LOWER BACK PAIN.**
- **MRS. MOSER IS EMPLOYED AT THE LOCAL HOSPITAL AS A LINEN SANITATION SPECIALIST.**
- **USING WHACS, YOU FIND THAT THERE ARE MANY POTENTIAL CONTRIBUTORS TO MRS. MOSER'S BACK PAIN.**

- Job related contributors to Mrs. Moser's back pain include:
 - 1. Repetitive lifting of heavy laundry bags.
 - 2. Repetitive bending and stretching to remove clean laundry from carts and put it on high and low storage shelves.
- A non-job-related contributor to Mrs. Moser's back pain is her gardening, an activity she spends at least one to two hours a day at.
- Back injuries have historically accounted for a large proportion of workers' compensation claims.
- Many of these injuries are a result of the cumulative stress of repetitive lifts of heavy or bulky objects, especially where twisting is involved.
- Training programs to teach workers to "lift safely" have been largely unsuccessful.
- Devices like conveyors, lifting tables, and hoists have enabled some facilities to reduce their back injury rates.



- What points were illustrated in the three case histories?

CASE HISTORY: PENICILLIN ALLERGY

Q Can different worksites in hospitals, or factories, be treated as discrete operating units?

- Yes, but just to the extent that they are closed off to other worksites. For example, “Is dust from the laundry area contained, or does it drift out the doors and into other worksites?” Or, “Is the noise from the boiler room muffled, or can it be heard in the next door locker room?”

CASE HISTORY: ETHYLENE OXIDE

Q **Pregnancy motivated Elsa Greer to ask questions about her working conditions. What other life changes could create special concerns for your working patients?**

- Age-onset illnesses such as diabetes, arthritis or osteoporosis could create “new” problems in an “old” job.

CASE HISTORY: BACK PAIN

Q Back injury is a common occupational hazard. What is the “hidden” component of back injury recovery?

- The patient's satisfaction with his job and his personal motivation to return can significantly decrease his time away from work.

SUMMARY 1

SITE VISITS ENABLE YOU TO:

- **UNDERSTAND OTHER OCCUPATIONAL HEALTH ISSUES**
- **WRITE APPROPRIATE, COMMON SENSE WORK RESTRICTIONS**
- **PUT THE PATIENT'S CONCERNS IN CONTEXT**
- **INTERACT BETTER WITH EMPLOYERS**

- Each occupational health issue you come in contact with adds to your base of knowledge for future occupational health questions.
- When you know what your patient does, and how he does it, you will be able to give him appropriate guidelines for his return to work.
- Familiarity with your patient's worksite will enable you to understand his fears and concerns.
- Your ability to interact with an employer will increase as your knowledge of the employer's operation increases.

SUMMARY 2

HOSPITAL SITE VISITS:

- **ARE COST EFFECTIVE**
- **ARE COMPARABLE TO FACTORY SITE VISITS IN CONTENT**
- **CAN BE MORE AMENABLE TO SMALL, INDEPENDENT GROUP TOURS**
- **ARE WELL ACCEPTED BY RESIDENTS AND STAFF**

- Proximity to the residents ensures the cost-effectiveness of using the hospital as a site visit.
- The diversity and size of the staff, working environments, and occupational hazards of a hospital make it very comparable to a factory.
- Because physicians can act as "tour guides" in the hospital, smaller group tours may be possible. Often on a "teaching" factory site visit, the whole group must go with a single guide. In this situation, the number of questions which can be asked may be limited. In addition, the tour guide may deliberately, or inadvertently, rush the group through or past hazardous areas.

CREDITS

**This lecture was developed under the auspices of the
Environmental Medicine Curriculum Committee of the SC
Statewide Family Practice Residency System.**

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- **Charleston - Drs. C. Brock, W. Simpson, & S. Schuman**
- **Columbia - Drs. E.P. McCutcheon & P.W. Stone**
- **Florence - Dr. H.E. Terrell**
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- **Spartanburg - Dr. M.T. Godenick**

CREDITS

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produced by the:**

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SAFETY
DATA SHEET

Page 1

1. INGREDIENTS: (% w/w, unless otherwise noted)

6,O-Diethyl O-(3,5,6-trichloro-2-pyridinyl) phosphorothioate, (chlorpyrifos)	41.5%
CAS# 002921-88-2	
Inert ingredients (total), including:	58.5%
Xylene range aromatic solvent	
CAS# 064742-95-6	
(NOTE: 1,2,4-trimethylbenzene, CAS# 000095-63-6, is a component of xylene-range aromatic solvent)	
Proprietary emulsifiers	

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 290°F, 143°C
VAP. PRESS: <10 mmHg @ 25°C
VAP. DENSITY: Not determined
SOL. IN WATER: Emulsifiable

SP. GRAVITY: 1.16
APPEARANCE: Clear liquid
ODOR: Solvent-type odor

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 122°F, 50°C
METHOD USED: TCC

FLAMMABLE LIMITS
LFL: 1%
UFL: 6% (xylene range aromatic solvent)

EXTINGUISHING MEDIA: Foam, carbon dioxide, and dry chemical.
FIRE & EXPLOSION HAZARDS: Foam fire extinguishing system

is preferred because uncontrolled water can spread possible contamination. Toxic irritating gases may be formed in the event of a fire. Rapid decomposition above 320-392°F (160-200°C). Violent rupture of containers due to overpressurization may occur at temperatures generated during a fire.

FIRE-FIGHTING EQUIPMENT: Use positive-pressure, self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Avoid heating above 50°C (122°F). Chlorpyrifos undergoes exothermic decomposition at approximately 130°C (266°F) which can lead to higher temperatures and violent decomposition if generated heat is not removed. Contains petroleum derivative solvent - will burn.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) None known.

HAZARDOUS DECOMPOSITION PRODUCTS: Under fire conditions, hydrogen chloride, ethyl sulfide, diethyl sulfide and nitrogen oxides can be formed.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Absorb spills with absorbent material such as HAZORB, ZORBALL, or dirt. Thoroughly wash body areas which come into contact with this product. Contain spills to keep out of sewers. For large spills, consult manufacturer.

DISPOSAL METHOD: Do not contaminate food, feed, or water by

storage or disposal. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the hazardous waste representative at the nearest EPA regional office for guidance.

6. HEALTH HAZARD DATA:

EYE: May cause moderate eye irritation. May cause moderate corneal injury.

SKIN CONTACT: Prolonged exposure may cause skin irritation.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The LD₅₀ for skin absorption in rabbits is >2000 mg/kg.

INGESTION: Single dose oral toxicity is low. The oral LD₅₀ for male and female rats is 599 and 834 mg/kg, respectively. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury. If aspirated (liquid enters the lung), may cause lung damage or even death due to chemical pneumonia, a condition caused by petroleum and petroleum-like solvents.

INHALATION: The LC₅₀ for rats is >1.3 mg/l for four hours. Excessive exposure to solvent may cause, in order of increasing concentration: eye and upper respiratory tract irritation, feeling of increased body heat, central nervous system effects such as headache, dizziness, incoordination, drowsiness, unconsciousness.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Excessive exposure may produce organophosphate type cholinesterase inhibition. Signs and symptoms of excessive exposure to active ingredient may be headache, dizziness, incoordination, muscle twitching, tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in chest, excessive urination, convulsions. Active ingredient produced mild adrenal effects when fed to rats, but only at doses that greatly

Page 2

exceeded any exposures that would be received during use of this product. Solvent has been reported to cause liver, kidney, and blood effects at high exposure levels.

CANCER INFORMATION: Active ingredient did not cause cancer in long-term animal studies.

TERATOLOGY (BIRTH DEFECTS): Active ingredient did not cause birth defects in laboratory animals.

REPRODUCTIVE EFFECTS: In animal studies, active ingredient has been shown not to interfere with reproduction.

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL): Results of in vitro ('test tube') and animal mutagenicity tests on the aromatic solvent have been negative. Based on a majority of negative data and some equivocal or marginally positive results, active ingredient is considered to have minimal mutagenic potential.

7. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: Wash off in flowing water or shower.

INGESTION: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

INHALATION: Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

NOTE TO PHYSICIAN: The decision of whether to induce vomiting or not should be made by an attending physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Suggest serum and/or RBC cholinesterase determination. Atropine by intravenous administration is the antidote of choice. Oximes may or may not be therapeutic but it is recommended they not be used in place of atropine. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE: ACGIH TLV and OSHA PEL are 0.2 mg/m³ for chlorpyrifos. Skin. None established for xylene range aromatic solvent as a whole, but the supplier recommends a guideline of 50 ppm for the product, which is a mixture of petroleum hydrocarbons. ACGIH TLV and OSHA PEL are 25 ppm for 1,2,4-trimethylbenzene, one of the components of xylene-range aromatic solvent.

VENTILATION: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. For emergency and other conditions where the exposure guideline may be greatly exceeded, use an approved

positive-pressure self-contained breathing apparatus, or positive-pressure airline with auxiliary self-contained air supply.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Source of running water for washing contaminated skin should be located in immediate work area. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Contaminated leather items, such as shoes, belts and watchbands, should be removed and destroyed.

EYE PROTECTION: Use chemical goggles. If vapor exposure causes eye discomfort, use a full-face respirator.

9. ADDITIONAL INFORMATION:

REGULATORY REQUIREMENTS: (Not meant to be all-inclusive – selected regulations represented.)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its' activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
1,2,4-TRIMETHYLBENZENE	000095-63-6	1-5%

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard

A delayed health hazard

A fire hazard

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: See label. Keep out of reach of children. Do not swallow. Do not get in eyes or on skin. Avoid breathing mist or vapors. Keep away from heat and open flame. Handle concentrate in ventilated area. Wash thoroughly after handling. Depending on degree of exposure of personnel, consider monitoring blood cholinesterase levels. If in doubt, seek advice from DowElanco. Keep away from food, feedstuffs and domestic water supplies.

For health and safety information on end-use dilutions of up to 1% DURSBAN® insecticides, see the Health and Safety Fact Sheet, Form #135-1270-88, available from DowElanco.

MSDS STATUS: Revised sections 1, 6, 7, 8, and 9.

ENVIRONMENTAL MEDICINE UPDATE

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Greenwood . Dr. D.E. Ruis
Greenville . Dr. D.S. Grubbs
Spartanburg . Dr. M.J. Godenick

Volume 1 No. 1
August 1, 1993

Samuel T. Caldwell, Editor
792-2281 · Fax 792-4702

A Publication of the Environmental Medicine Curriculum Committee

The objectives of this newsletter are to report on the activities of the committee and to share with the members: 1) developments in environmental medicine curriculum for faculty, residents, and clerkship students, 2) abstracts of current research in environmental and occupational medicine including relevant case histories, and 3) the latest information on environmental risk assessment and the communication of environmental risks to patients.

Committee members are encouraged to submit brief articles and case histories to the newsletter. -- Editor

What is Environmental Medicine?

Probably the most widely accepted definition of environmental medicine is one adopted earlier this year by the American College of Occupational and Environmental Medicine. The ACOEM defines environmental medicine as a discipline

that addresses the prevention, diagnosis and treatment of adverse health effects caused by physical, chemical, biological, mechanical and psychosocial factors of individual and group interaction with the environment. In addition, environmental medicine utilizes multidisciplinary skills and serves as an interface between clinical and population-based medicine.

DeHart RL. Accepting the environmental medicine challenge. JOM 1993; 35:265-266.

What is the Role of Environmental Medicine in Family Practice?

Dr. Stan Schuman defines it as the ability of the family practitioner to assess, evaluate and manage the health effects of exposure to environmental hazards with the same measure of skill, sympathy and confidence that physicians achieve for other acute and chronic illnesses. No one is better equipped to help the patient and family to keep things in perspective.

"The training of family physi-

cians prepares them to respond to environmental hazards far more ably than they may think," says Dr. Schuman.

"Family physicians are well trained and experienced in the basic skills required in environmental medicine. These include history taking, physical examination, ordering appropriate laboratory tests, treatment and follow-up."

"What we should emphasize with residents and medical students are the process skills of effective doctor/patient evaluation of environmental and occupational risk. They need to learn how to communicate risk, or lack of risk, to exposed patients and workers. In support of the process skills, what the busy family physician needs," Dr. Schuman emphasizes, "is access to data bases and consultation that can respond to their inquiries promptly and specifically."

Extent of Environmental Health Hazards

Accurate data on the magnitude of environmental medicine

cases seen by family medicine physicians are elusive. One article reports:

"Although reliable statistics are lacking, a consensus has emerged that occupational and environmental diseases are serious but insufficiently recognized problems. Moreover, public concern about potential hazards to health from exposure to chemical and physical agents in the environment has increased markedly in recent years."

This article also cites an Institute of Medicine recommendation for primary care physicians to be able to identify occupationally or environmentally induced conditions and make appropriate referrals for follow-up.

Rosenstock L et al. Occupational and environmental medicine: Meeting the growing need for clinical services. N Engl J Med 1991; 325:924-927.

Potassium Dichromate Case History

Last month on a Friday afternoon, a container being loaded onto a ship docked in Charleston harbor ruptured spilling potassium dichromate. One stevedore's hands were splashed. The worker was transported to a local emergency room where his only complaint was yellow staining of the hands. He was decontaminated, evaluated, and instructed to report to the hospital on Monday morning for his lab results prior to returning to work.

The worker remained asymptomatic and was cleared by the hospital physician to return to work. Upon arrival at the job site, the worker discovered that the area of the spill had been cordoned off with reflective yellow tape and posted with danger signs. A crew dressed in protective suits with self contained breathing apparatus was cleaning up of the area of the spill. This sight alarmed the worker. He felt he had not been told all there was to know about his exposure to the chemical. He immediately left work to seek the help of someone he said he could trust -- his family physician.

One hour later, the physician contacted MUSC for assistance. He was referred to the Occupational and Environmental office in the Department of Family Medicine. Staff members researched the health effects of potassium dichromate. This included the retrieval of a Material Safety Data Sheet from an on-line service and a review of in-house references. Dr. Schuman consulted with the physician who was advised that other than the skin discoloration, and the risk of being sensitized to potassium dichromate, there was no reason to suspect acute or chronic health effects from the type of exposure the patient experienced. Pertinent health effects data were faxed to the physician as well as more detailed information by mail for his patient record.

With the pertinent information and prompt consultation, the physician was able to reassure

his patient and return him to work without hesitation.

Patient Expectations

"Patients should look to their physicians for advice on prevention and for diagnosis and treatment of environmentally caused conditions as well as for an understanding of well-publicized hazards that may provoke great anxiety."

Kilbourne EM and Weiner J. Occupational and environmental medicine: The internist's role. Ann Intern Med 1990; 113:974-982.

Committee Activities

► Dr. Schuman met with each committee member during July for the purpose of discussing individual and specific site needs for environmental medicine curriculum. Your comments and suggestions are appreciated and will be used to guide the development of the curriculum.

► A questionnaire was faxed to the committee members on July 26. Your responses to the questionnaire will be used to develop the agenda and format for the first committee meeting scheduled for the evening of September 2 and the morning of September 3, 1993 in Columbia. Details on the meeting and the agenda will be mailed by mid-August.

ENVIRONMENTAL MEDICINE UPDATE

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Spartanburg - Dr. M.J. Godenich

Volume 1 No. 2

September 1, 1993

Samuel T. Caldwell, Editor

792-2281 · Fax 792-4702

Committee Activities

► Committee members were sent a questionnaire by fax on July 27 for the purpose of ranking their preferences for environmental medicine topics to be discussed at the September committee meeting. A listing of 18 possible topics was provided. The committee also had the option of submitting their own preferences.

The top five topics of preference were: 1. translating the theoretical to the practical - case study exercises, 2. basics of environmental toxicology for family physicians, 3. concepts of environmental risk communication to patients, 4. taking an environmental/occupational history and 5. cluster epidemiology.

► The committee meeting will be held September 2-3, 1993 at the Sheraton Hotel and Convention Center in Columbia. Drs. Virginia Sublet and Gregory L. Phelps are guest faculty.

Dr. Sublet trained in toxicology at the University of Cincinnati (UC) and received her PhD in 1988. She became the director

of Occupational/Environmental Toxicology at the UC Drug and Poison Information Center and Assistant Professor of Occupational/Environmental Medicine.

In 1989 she accepted a faculty fellowship with the Agency for Toxic Substances and Disease Registry. Dr. Sublet has been actively involved in the development of numerous educational programs on environmental medicine for health care professionals.

Dr. Gregory L. Phelps is a graduate of the Medical University of South Carolina and the Anderson Family Medicine Residency. He received his MPH degree from the Medical College of Wisconsin. His certifications include the American Board of Family Practice and the American Board of Preventive Medicine (Occupational Medicine).

He is currently the Director of the Occupational Health Center, and medical director of Employee Health Services, Parkside Recovery Center, and Work Horizons at the Mercer University School of Medicine in Macon, GA. He is also

Associate Professor in the Department of Family and Community Medicine.

Multiple Chemical Sensitivity Lecture

Dr. Stan Schuman and his staff have developed the lecture "Multiple Chemical Sensitivity." He gave the lecture to the second and third year family medicine residents in Charleston on August 17. If a committee member would like to schedule this lecture for his residents, please call Dr. Schuman's secretary, JoAnn Retter, at 792-2281.

A copy of the lecture will be provided to each family practice residency site. The lecture consists of thirty 35 mm photographic and text slides, script, list of references and copies of recent articles from the medical literature.

Sick Building Syndrome*

Complaints related to indoor air quality in recent years have led to investigations and an increasing body of literature. Patients

with complaints thought to be related to indoor air quality may have diseases similar to those seen from other sources. These include asthma, hypersensitivity pneumonitis, allergic rhinitis, Legionella, tuberculosis and contact dermatitis.

Hodgson MJ. Buildings and health. Health and Environmental Digest 1993; 7:1-3.

Environmental and Occupational Medicine in the 18th Century

"Historically, it was Bernardino Ramazzini, an Italian physician writing at the beginning of the 18 century, who added one of the few significant additions to the Hippocratic approach to the patient. About 50 years before the Industrial Revolution, Ramazzini wrote that physicians should ask their patients about their occupation."

**Frank AL. The occupational and environmental history and examination, in Rom NW (ed): Environmental and occupational medicine. Boston: Little, Brown and Company; 1992.*

Case History - Methylene Chloride

A 66 year old retiree with no prior history of heart disease presented at the hospital ER with severe substernal chest pain. Prior to admission, he had been applying a liquid gel paint and varnish remover to a

chest of drawers in his basement. The pain began one hour after leaving the basement. He was admitted with a diagnosis of myocardial infarction. The patient showed his physician the can of material he had been using. It contained 80% methylene chloride and the label advised use only in adequately ventilated areas.

The patient was discharged, but readmitted to the hospital three weeks later, again with severe myocardial infarction following his use of the paint and varnish remover in his basement. His symptoms included substernal pain complicated by cardiogenic shock, dysrhythmia and heart failure.

Six months later the patient returned to his basement to complete the paint stripping. Two hours after he started working, he developed chest pain and died.

Methylene chloride is a CNS depressant and is metabolized to carbon monoxide. CO places significant stress on the cardiovascular system. If used in a poorly ventilated area, concentrations of methylene chloride can quickly reach dangerous levels resulting in severe CO poisoning. Patients with underlying coronary disease are more sensitive to the toxic effects. The amount of CO produced is proportional to the amount of methylene chloride absorbed.

**Tarcher AB. The occupational and environmental health history, in Tarcher AB (ed): Principles and practices of environmental medicine. New York: Plenum; 1992.*

Teaching Exposure History Taking

Primary care physicians have an increasingly important role in occupational and environmental medicine (O/E) and possess most of the tools necessary for the identification of O/E diseases. Because O/E skills are not yet adequately incorporated into medical education and practice, physicians who are uncomfortable with O/E exposures need to develop competence, confidence and motivation in the historical component of the diagnosis. These skills will enable the practitioner to make more accurate diagnoses and prevent or reduce the severity of O/E diseases.

This article proposes that students, residents and physicians have ready access to listings of sentinel pathophysiologic conditions (SPC) of symptoms, lab reports, etc. which have a probability of being O/E diagnoses. Through the use of a SPC listing (on a pocket card or included on a medical history form), it is believed that the physician will be motivated to pursue the O/E history when it is potentially relevant and to ask more in-depth questions. Through such practice, physicians can gain the confidence and competence in exploring O/E questions that they have with the rest of the medical history.

**Kipen HM and Craner J. Sentinel pathophysiologic conditions: An adjunct to teaching occupational and environmental disease recognition and history taking. Env Research 1992; 59:93-100.*

ENVIRONMENTAL MEDICINE UPDATE

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Greenwood - Dr. D.E. Ruiz
Spartanburg - Dr. M.J. Godenick

Volume 1 No. 3
October 1, 1993

Samuel T. Caldwell, Editor
792-2281 - Fax 792-4702

Committee Activities

► The first Environmental Medicine Curriculum Committee (EMCC) meeting was held September 2-3, 1993 in Columbia. Members present included Drs. Woodall, Schuman, Simpson, McCutcheon, Grubbs, Ruiz and Godenick. Also attending the meeting were two guest lecturers; Dr. Gregory Phelps of the Mercer University School of Medicine and Dr. Virginia Sublet who is with the Agency for Toxic Substances and Disease Registry.

► Two goals were established by the EMCC: 1. raise the level of the environmental and occupational medicine (EOM) basic knowledge of faculty and residents, and 2. develop the educational materials to achieve goal 1.

The committee also reached consensus on the following items: 1. there is a mutual need among the seven family practice residency sites to develop EOM curriculum, 2. targets for EOM curriculum include faculty, residents, students and private practitioners, 3. EOM is an essential part of the family

physician's skills and processes, and 4. family practice encompasses the community, households, work experience and environmental concerns.

► The committee agreed to design and implement three research projects involving all of the residency sites. The projects are to be completed prior to the next EMCC meeting.

The first project is the *Environmental & Occupational Medicine Survey of Family Medicine Residents*. It is designed to assess the residents' opinions on environmental and occupational medicine.

Secondly, a baseline on EOM data included in patient records will be documented through the *Patient Chart Review for Environmental & Occupational Medicine*. Fifty patient records will be randomly selected for review at each residency site.

The third project is the *Environmental & Occupational Medicine Curriculum Survey*. This project will document current EOM curriculum among the programs of the Statewide Family Practice Residency System.

► In addition to the three research projects, a draft curriculum outline will be prepared for discussion at the next meeting. The outline will include formats covering eight hours instruction, one week and one month electives and longitudinal core curriculum to be delivered during the three year residency.

► The next EMCC meeting is scheduled for December 2-3, 1993 at the Sheraton Hotel and Convention Center in Columbia. If you have a conflict in your schedule, please arrange to have a colleague represent your program.

Material Safety Data Sheets (MSDSs) Available to the EMCC

The Occupational and Environmental Medicine office of the MUSC Department of Family Medicine has access to a computerized MSDS data base. Committee members may obtain MSDSs by calling Larry Spell at 792-2281. MSDSs will be either faxed or mailed at the request of the committee member.

Electromagnetic Fields and Cancer

Since 1979 there have been several reports linking cancer to exposure to electromagnetic fields. Three 1992 studies, two Swedish and one Danish, gained international attention.

The first Swedish study reported an elevated risk and a dose-response relationship for chronic lymphatic leukemia and brain tumors among skilled workers exposed to electromagnetic fields. An estimated 20 cases per year were projected.

The second Swedish study reported an excess of leukemia among children who lived close to high-voltage power lines. The risk increased with greater exposure to magnetic fields. The excess risk cited in this study was based on seven cases.

The Danish study reported an elevated risk of leukemia among men exposed to magnetic fields at work. Other work-related factors that may have affected the risk were not examined.

The synopses presented above are from Sweden's National Board of Occupational Health and Safety. The board states that it "... does not have sufficient basis for defining limit values or other types of standard for exposure to low-frequency magnetic fields." *

*Delang E (ed). *Low-frequency electromagnetic fields. Newsletter, National Board of Occupational Safety and Health, Abetarskyddsstyrelsen, Sweden.* 3/93.

W*H*A*C*

At the September EMCC meeting, Dr. Gregory Phelps urged a fundamental approach for teaching EOM to family medicine residents. Discussion with the committee members led to the following mnemonic to remind physicians to ask essential EOM questions when taking a patient's history.

**What do you do?
How do you do it?
Are you concerned with any of
your exposures?
Co-workers having similar
problems?**

A Decade of Studies of Human Exposure*

The Environmental Protection Agency carried out four Total Exposure Assessment Methodology (TEAM) studies on human exposure to pollutants between 1980 and 1990. These included exposure to volatile organic compounds (VOCs), carbon monoxide, pesticides and particles.

Human exposure was assessed through the analysis of outdoor air, air from indoors collected with stationary air samplers and from personal air samplers worn by study participants.

Twenty-five VOCs were targeted. Personal exposures were found to exceed outdoor air concentrations and for most chemicals, personal exposures exceeded indoor air concentrations. Smoking, wearing freshly dry-cleaned clothing and using mothballs and bathroom-

toilet deodorants were hypothesized as personal activities contributing to exposure.

Exposure to carbon monoxide followed the same pattern as VOCs. Gas stoves and tobacco smoke accounted for significant portions of exposure to persons in homes with these sources.

The pesticide study focused on 32 common household insecticides and termiticides. The indoor air concentrations were reported to far exceed outdoor air levels. Termiticides found indoors enter households through soil gas transport.

The particle study found that daytime personal air samples had 50% more particles than were found in either outdoor or indoor air samples. Significant associations were found with household cleaning and living in a home with a smoker.

The conclusion reached by the author is that the major sources of exposure are personal activities and consumer products. "This result is at odds with most existing environmental legislation, which generally does not deal with products or with indoor air in homes, in favor of regulating "major" stationary and mobile sources. These sources, however, provide only 2-25% of personal exposure to most of the two dozen or so toxic and carcinogenic VOCs and pesticides included in the TEAM Studies."

*Wallace L. *A decade of studies of human exposure: What have we learned?* Risk Analysis 1993; 13:135-139.

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Volume 1 No. 4
November 1, 1993

Samuel T. Caldwell, Editor
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Committee Activities

► The EMCC is working on three projects involving the seven family practice residencies. These include *Environmental & Occupational Medicine Survey of Family Medicine Residents*, *Patient Chart Review for Environmental & Occupational Medicine*, and *Environmental & Occupational Medicine Curriculum Survey*. Questionnaires and other materials for the studies were mailed to the committee on October 8.

Please return your surveys to Dr. Schuman by November 15. This will allow two weeks to collate project reports from the seven sites into draft reports prior to the next EMCC meeting.

► EMCC members will be receiving a letter from Mr. Larry Spell who is a staff member of the Department of Family Medicine Occupational and Environmental Medicine Office at MUSC. His letter will introduce a new service to the committee. The objective of the service is to provide each committee member with

journal articles pertinent to the goals of the committee. Every other month members will receive a listing of recently published journal articles selected from a computerized literature search of major data bases by the MUSC Library. Note the papers you would like to have copies of and return the list to Mr. Spell. Copies will then be mailed to you.

► The next EMCC meeting is scheduled for December 2-3, 1993 at the Sheraton Hotel and Convention Center in Columbia. The meeting format will be the same as the first meeting: a dinner and evening meeting on Thursday, December 2 and a morning meeting followed by lunch on Friday, December 3. The agenda will focus on the results of the three committee research projects, draft curriculum plans (longitudinal over the three year family medicine residency, self-study and electives), and ideas for financial support for the committee. There will be no guest lecturers.

If you have a conflict in your schedule, please arrange to have a colleague represent you!

Residential Exposure to Radon*

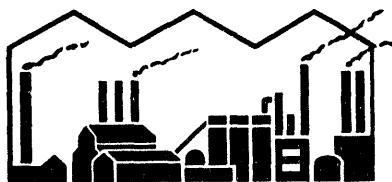
The radon levels in the ambient air of the homes of 35 lung cancer patients and 35 matched controls were monitored for eight to ten months. Twenty patients had small cell lung carcinoma, 11 had adenocarcinoma, two had squamous cell carcinoma and two had unclassified carcinoma.

Living on the home ground level was found to be significantly higher in the small cell lung cancer patient group than among the controls. Radon exposure greater than 1.0 pCi/l in this same group was associated with an increased risk of lung cancer, although the risk did not show statistical significance.

Although the study is based on small numbers, the authors state that their report " . . . supports the presence of a differentially increased risk for small cell lung carcinoma following long-term radon exposure."

*Biberman R et al. *Increased risk for small cell lung cancer following residential exposure to low-dose radon: a pilot study*. Arch Environ Health 1993; 48:209-212.

Occupational & Environmental Exposures Reported to Poison Control Centers



In 1988, 25,368 occupational and 7,565 environmental exposures were identified from a total of 1,368,748 human poison exposure cases reported by the American Association of Poison Control Centers Toxic Exposure Surveillance System. Compared with other poisonings, occupational and environmental poisoning cases were characterized as being predominantly inhalation exposures, tended to be chronic and subacute, and "... demonstrated greater morbidity, mortality, and increased use of health care resources."

Chemicals, cleaning substances, hydrocarbons, and fumes/gases/vapors accounted for the most common causes of occupational exposure. The most frequent categories of environmental exposures included fumes/gases/vapors, pesticides and chemicals.

Cement/concrete, hydrofluoric acid, alkali and hydrocarbons were the substance categories representing the greatest number of occupational cases whose medical outcomes were classified as moderate effect, major effect or death. Carbon monoxide, pesticides and bites/venomation accounted for the leading substance categories of

the more serious environmental exposures. The environmental cases tended to be less severe than the occupational exposures.

Litovitz T et al. Occupational and environmental exposures reported to poison centers. Am J Public Health 1993; 83:739-743.

*Teaching Environmental and Occupational Medicine in Primary Care Residency Programs**

Duke University has used several approaches in providing required environmental and occupational medicine (EOM) instruction to internal and family medicine residents since 1984.

Faculty believe that a substantive EOM experience should provide a workplace experience for the residents. Due to the time restraints of residents, the hospital and university are preferred as workplace examples rather than using the limited time of residents to travel to local industries.

A four week elective in EOM for family medicine residents was implemented in 1984. This experience became a required rotation in 1985 when grant support for resident stipends was available. The required rotation reverted to elective status when funding was discontinued in 1987. Residents who take the elective spend half of their time in EOM activities and the other half of the time continuing their family medicine clinical activities.

The current EOM curriculum for the Duke-Watts family medicine residents consists of four modules:

1) A monthly seminar series on EOM topics is presented by the Division of Occupation and Environmental Medicine faculty. Residents are required to attend 18 of these seminars over three years to graduate.

2) Residents spend two hours per week at an employee health clinic during their five-week dermatology rotation. Learning objectives include competence in fitness-for-work evaluations, writing work restrictions, musculoskeletal injuries, evaluation of chemical and physical hazards and EOM history taking.

3) Residents are required to attend the back school program in the physical therapy department.

4) Residents are presented with a workbook consisting of pertinent EOM articles from the medical literature and of handouts from the EOM seminars. Residents are required to become familiar with the material and are required to take pre and post tests.

Frazier LM et al. Teaching occupational and environmental medicine in primary care residency training programs: using three approaches during 1984-1991. Am J Medical Sciences 1991; 302:42-45.

This publication is supported by grants from the National Institute of Environmental Health Sciences (NIH) grant DE-FG01-92EW50625.

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Volume 1 No. 5
December 1, 1993

Samuel T. Caldwell, Editor
792-2281 · Fax 792-4702

Committee Activities

► The EMCC will hold its second meeting December 2-3, 1993 at the Sheraton Hotel and Convention Center in Columbia. A summary of the meeting will be published in the January 1994 newsletter.

► At the last committee meeting, members set December 1 as the goal for the completion date of the three research projects: *EOM Survey of Family Medicine Residents*, *Patient Chart Review for EOM*, and *EOM Curriculum Survey*. This goal was achieved as a result of the efforts of each committee member and as a result of the cooperation among the seven family medicine residencies. Summaries of these projects will be published in the next newsletter.

EMCC Recognized

A brief article on the Environmental Medicine Curriculum Committee was published in the Fall 1993 newsletter of the Occupational & Environmental Interest Group of the Society of Teachers of Family Medicine.

The article commented on the fact that the EMCC was composed of representatives from each site of the SC Statewide Family Practice Residency Program.

display terminals (VDTs). Suggested hypotheses for the cause include: physical stress due to prolonged sitting, psychological stress of the work environment, and electromagnetic energy emissions.



Case Study: VDTs and Adverse Pregnancy Outcomes*

Clusters of stillbirths and low-birth weight and preterm births have been reported to be associated with the use of video

Because of public concern, NIOSH conducted a study to determine if there was an increased risk of spontaneous abortion among VDT users due to electromagnetic radiation. The researchers studied a population of 5,544 telephone company operators. Measurements of electromagnetic fields were made at a sampling of the operators' workstations. The study did not find any significant differences in the spontaneous abortion rate between exposed and nonexposed women for the entire pregnancy or by month of gestation. Also, no difference was found in the risk of spontaneous abortion between women using two different VDT models.

The case-study author concludes her chapter with a review of the current literature. She states ". . . the bulk of the research indicates that VDT technology does not pose a →

risk for miscarriage."

*Schnorr T. *Video display terminals and adverse pregnancy outcomes*. In: Steenland K (ed.), *Case studies in occupational epidemiology*. New York: Oxford Press, 1993.

Industrial Chemicals

Question: How many chemicals are used in industry today?

Answer: 65,000*

*Koren H. *Handbook of Environmental health and safety, volume I*. 2nd ed. Chelsea, MI: Lewis Publishers; 1991, p.444.

Public Perception of Radiation and Health

Kenneth Lichtenstein, M.D., and Ira Helfand, M.D., propose three reasons for public concern about nuclear weapons production and nuclear power. These include inaccurate reports in the media, disagreement among experts, and new medical evidence on the health hazards of low-level radiation.

The biological science on the effects of radiation on the body is well known. The problem for the public, and for health professionals as well, is the interpretation of epidemiological studies that attempt to relate low-level radiation to later cancers and other health effects. The authors report that the studies are based on unproven or unprovable hypothe-

ses. It is not surprising that the controversy over nuclear power and weapons production continues.

Scientific evidence is only one factor that impacts the public's perception on radiation risks. A second factor is fear. The public perceives radiation to pose a special danger because it is invisible and because of its lingering effects. The authors state that public policy must take this special fear into account.

*Lichtenstein K and Helfand I. *Radiation and health: Nuclear weapons and nuclear power*. In: Chivian E et al (eds.), *Critical condition - human health and the environment*. Cambridge: MIT Press, 1993.

MCS*

Multiple chemical sensitivity (MCS) is the name of a disease, first reported in the 1950s, in which the patient has adverse reactions when exposed to a variety of agents normally encountered in daily activities. Patients refer to the agents as chemicals. These include solvents, paints, carpeting, cosmetics, perfumes, building materials, pesticides, photocopy chemicals, newsprint, etc. In some cases, the onset of illness is linked by the patient to a single high-dose exposure (often on the job).

Adverse reactions consist of subjective symptoms without accompanying physical signs or abnormal laboratory reports. Fatigue, headache, memory loss and lack of concentration are

common symptoms. In many cases, the awareness of an offensive odor was the triggering factor for the illness.

Patients frequently describe a pattern of increasing intolerance to an agent and a belief that they lack immunologic protection. The MCS patient experiences fear, anxiety and depression as a result.

"Seasoned" physicians recognize in these patients a pattern of over-utilization of medical diagnostic facilities. Also, based on the results of several studies, ". . . it is clear that diagnosable psychiatric illness is common in patients with this disorder."

To treat MCS patients, physicians are advised to: 1. schedule regular visits and to make extra time for these visits, 2. focus on short-term workable goals to reduce the disability instead of focusing on specific symptoms, and 3. avoid ordering unnecessary additional tests. Although the treatment of current depression and anxiety in MCS patients is indicated, the patients often reject antidepressant medication and psychotherapy. Patients report an intolerance to the medications, even at low doses.

*Terr A I. *Multiple chemical sensitivities (editorial)*. Ann Intern Med 1993; 119(2):163-164.

This publication is supported in part by funds from the U.S. Department of Energy grant DE-FG01-92EW50625.

ENVIRONMENTAL MEDICINE UPDATE

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Volume 1 No. 6
January 1, 1994

Samuel T. Caldwell, Editor
792-2281 · Fax 792-4702

Committee Activities

The EMCC met December 2-3, 1993 at the Sheraton Hotel and Convention Center in Columbia. The meeting agenda included: a review and discussion of the results of the three research projects implemented by the EMCC; the presentation and approval of a plan for longitudinal and elective environmental and occupational medicine curriculum; and the development of a strategy to incorporate each committee member's ideas and suggestions in the longitudinal curriculum modules.

Summaries of the above items and of other committee business discussed at the meeting are presented below.

► Environmental and Occupational Medicine Curriculum Survey

The objective of this survey was to document the existing EOM curriculum among the seven family practice residencies.

Five residencies reported required EOM curriculum for

either first, second or third year residents while only two sites had no required curriculum. The required curriculum varied among the sites and ranged from noon conferences to one month rotations. Anderson was the only site with required curriculum for all three residency years.

Three sites reported that their residents are required to make EOM site visits. These include second year residents at Anderson and Columbia and first year residents at Greenville.

All seven residencies have EOM topics presented at noon conferences. Only three (Anderson, Charleston and Greenville) have allocated a specific number of noon conferences for EOM.

Four sites (Charleston, Columbia, Greenwood and Greenville) offer electives in EOM. Greenwood's elective is not offered on site.

► Patient Chart Review for Environmental and Occupational Medicine

The objective of this project

was to review a random sample of patient charts for selected EOM criteria. Fifty patient charts were examined at each site, except for Charleston which reviewed 20, for a total of 320 records. Patients under age 18 were excluded.

In the last two years, the patient's occupation was listed in only 29% of the records. In the same time period, the patient's job/work place was described in only 12% of the charts.

The third EOM criteria reviewed was the question, "Was there an EOM concern described in the past two years?" Thirty-three charts (10%) noted an EOM concern expressed by patients during the period.

The final criteria reviewed was whether the patient had ever been treated for a recognized EOM problem. A total of 52 patients, 16%, had received treatment. Twenty-three of the recorded problems were musculoskeletal injuries including low back pain, carpal tunnel syndrome, bursitis, tendinitis, and muscle strain. Other EOM problems included asthma, noise induced hearing loss, job

stress, contact dermatitis and work related trauma.

► *Environmental and Occupational Medicine Survey of Family Medicine Residents*

The objective of this survey was to document the residents' perceptions of EOM and their desire for EOM curriculum. A total of 130 residents responded to the survey.

The residents were asked to rank order a list of 12 perceived difficulties with EOM. They were also permitted to write in their own reasons. The difficulties, with 1 being the worst, as perceived by the residents were: 1. lack of experience, 2. too much paper work, 3. perceived secondary gains by patients, 4. too time consuming, 5. hassles with industry and special interests groups, 6. lack of role models, 7. potential ethical issues, 8. fear of legal repercussions, 9. too many industries and health concerns, 10. too much media attention, 11. irrelevant for my patients, and 12. irrelevant for family medicine.

The residents were also asked to comment on what they liked most and what they liked least about EOM. "Prevention" and the "relevancy of EOM" to family medicine were frequently cited as reasons why the residents liked EOM. "Paper work," "EOM is too broad," and "lack of experience" were often listed as reasons why the residents do not like EOM.

The final question asked of the

residents was, "Would you consider spending elective time in EOM?" Seventy-six percent of the respondents said yes.

► *WHACS*

At its September 1993 meeting, the EMCC developed the mnemonic, WHAC, to remind physicians to ask essential EOM questions when taking a patient's history. At its December meeting, the committee added the letter S to WHAC. The S is for job satisfaction. The satisfaction a patient has with his or her job will influence the patient's perceptions of occupational risks and also the patient's return to work after an occupational related injury or illness.

The new mnemonic is:

What do you do?

How do you do it?

Are you concerned with any of your exposures on or off the job?

Co-workers or others having similar problems.

Satisfied with your job?

► *Environmental and Occupational Medicine Curriculum*

The EMCC discussed, at its September meeting, strategies for and the content of longitudinal EOM core curriculum and EOM electives for the family practice residencies. A written outline of the curriculum was approved by the committee at the December meeting.

The longitudinal curriculum

will be developed first. The curriculum will consist of modules of educational materials developed for five topics. The topics include: 1. EOM History Taking, 2. Clinician Response to EOM Hazards, 3. Risk Assessment and Risk Communication, 4. EOM Data Bases and Consultants, and 5. EOM in Private Practice.

The modules will consist of slide lectures with scripts as well as self-study materials including computer presentations of the slide lectures, interactive computer programs, literature reviews and monographs.

Questionnaires for each of the five longitudinal-curriculum topics were mailed to the committee a few days after the December meeting. The purpose of the questionnaires is to give all committee members an opportunity to make suggestions for and comments on the contents of each of the modules. Draft curriculum will be presented to the committee at its next meeting.

EMCC members are urged to return their questionnaires to Dr. Schuman at their earliest convenience.

► *Next Meeting*

The next EMCC meeting will be held on Friday, March 11, 1994 at the Beach Cove Inn in North Myrtle Beach, SC.

This publication is supported in part by funds from the U.S. Department of Energy grant DE-FG01-92EW50625.

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Volume 1 No. 7
February 1, 1994

Samuel T. Caldwell, Editor
792-2281 - Fax 792-4702

Committee Activities

The next EMCC meeting is scheduled for the morning of Friday, March 11, 1994, at the Beach Cove Inn in North Myrtle Beach, SC. The meeting will begin at 7:30 am with a continental breakfast and will conclude with lunch at noon time.

The objective of the meeting is to review educational materials developed for the five EOM longitudinal curriculum modules. The materials include slides lectures, scripts and interactive computer programs. Another item on the agenda will be a discussion of the best procedures for family medicine residents and faculty to access the consultative and research services of the Occupational and Environmental Medicine Office in Charleston.

Two guests will be present. Mr. Larry Spell, Staff Development and Resource Coordinator with the MUSC Department of Family Medicine, will demonstrate the interactive computer programs. The second guest is Dr. Martin Jones, Director of the MUSC Environ-

mental Hazards Program (EHAP). EHAP is supporting the development of the EOM curriculum.

A detailed agenda and map to the Beach Cove Inn will be mailed to the committee by February 15. If an EMCC member cannot attend the meeting, please arrange to have a colleague represent your residency training site.

Case History- Carbon Tetrachloride*

Carbon tetrachloride (CCl₄) has a variety of uses. These include use as a fire extinguisher, spot remover for clothing and carpeting, and as a solvent for oils, lacquers, varnishes and rubber waxes.

Although the potentiating effect of ethanol on CCl₄ toxicity in experimental animals is well known, there has been little evidence of this effect in humans. Two case histories published last week provide strong circumstantial evidence that this effect also occurs in humans.

The first case involved one of five men exposed to CCl₄ vapors from an automatic extinguisher system for two hours following an accidental fire in a factory. A few hours later, a 36 year old worker developed nausea, vomiting, diarrhea and fever. He was treated for influenza for one week before being admitted to the hospital with anuria and liver impairment. Renal function recovered after seven hemodialysis sessions over a three week period.

The second case also involved exposure to vapors from CCl₄ used as a fire extinguisher. Two workers were exposed for about six hours while trying to prevent a fire in a poorly ventilated boat. One worker, age 31, developed nausea, epigastric pain, vomiting and fever a few hours later. Three days later he was jaundiced and had dark urine. He was then hospitalized with oliguria, proteinuria and hepatomegaly. Blood tests showed severe liver impairment and progressive kidney failure. The patient then developed anuria. He was placed on hemodialysis and recovered after 17 days.

The differentiating history in these two cases were reports by relatives and colleagues that confirmed the patients had a larger daily intake of alcohol than did their coworkers. Consumption was estimated to be about four ounces for the patient in the first case and about eight ounces for the patient in the second case. This is in contrast with the other workers who were exposed to CCl_4 in the same manner as the patients, but did not develop any of the same symptoms. The coworkers reported an average daily alcohol intake of less than 1.75 ounces.

*M Manno and M Rezzadore. *Critical role of ethanol abuse in carbon tetrachloride poisoning (letter to the editor)*. *Lancet* 1994; 343:232.

Facts: Medical Surveillance Programs in Industry*

- 17.8% of industries with medical surveillance programs use the services of certified occupational medicine physicians.
- 46.1% of industries with medical surveillance programs use the services of licensed physicians who are not board certified in occupational medicine.

- Among industries with medical surveillance programs 41.6% have formal arrangements with clinics, hospitals, and HMOs. 30.5% have formal arrangements with private physicians and 23.7% have arrangements with occupational health clinics.

ments with occupational health clinics.

■ 82.8% of the industries with medical surveillance use it for pre-employment, 60.2% for periodic monitoring, and 30.1% for monitoring following a spill or accident.

**Description and evaluation of medical surveillance programs in general industry and construction. Occupational Safety and Health Administration, U.S. Department of Labor. July 1993.*

Sick Building Syndrome*

There have been a number of theories about the causation of sick building syndrome (SBS). These include volatile organic compounds, molds, job stress, and poor lighting.

A new series of studies by Alan Hedge, Ph.D., Cornell University, suggest that some SBS illness may be related to particles of mineral fibers in office dust. The mineral fiber is from thermal and acoustic insulation, ceiling tiles, ventilation duct linings and other building construction materials.

Dr. Hedge has found a correlation between SBS complaints and the amount of mineral fibers in office air and in settled dust. Complaints of SBS illness and SBS absenteeism have declined when work stations were equipped with air filters containing activated carbon and a HEPA filter capable of removing mineral fibers.

**SBS: Left in dust. Health & Environmental Digest 1994; 7(9):7.*

Cumulative Trauma Disorders*

Cumulative trauma disorders are believed to be associated with repetitive tasks that require forceful exertion of the fingers or deviations or rotations of the hand, wrist, elbow or shoulder. One disorder, carpal tunnel syndrome (CTS), has received considerable attention in the past few years and has been the focus of debate.

CTS is defined as the entrapment of the median nerve of the hand and wrist in the passageway through the wrist's carpal bones. This results in numbness in the fingers which becomes painful when grasping or performing repetitive motions.

Recent and ongoing studies are now beginning to show a relationship between CTS, obesity and general fitness. For example, one study of 429 workers found obesity to be linked to slowing of the median nerve sensory conduction. It has been generally accepted that there is a strong correlation between CTS and the slowing of the median nerve conduction. In addition to obesity, the health of the median nerve is thought to be closely related to physical fitness.

**Allen CW. Weight of evidence links obesity, fitness to carpal tunnel syndrome. Occupational Safety & Health 1993; 62(11):51-52.*



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Volume 1 No. 8
March 1, 1994

Samuel T. Caldwell, Editor
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Committee Activities

► The next committee meeting is scheduled for March 11, 1993 at the Beach Cove Resort in North Myrtle Beach. A continental breakfast will be served at 7:00 am and the meeting will begin at 7:30. If you need directions to the meeting, please call JoAnn Retter at 792-2281 and she will fax them to you. If you cannot attend the meeting, please make arrangements to have a colleague represent your residency training site.

► The staff of the Occupational and Environmental Office sends their appreciation to the EMCC members for returning their questionnaires on the five EOM core curriculum modules. Your comments and suggestions guided the development of the modules and made our work easier. We are looking forward to sharing the modules with you on March 11.

Book Review - Radon

Radon is recognized as an important pollutant of indoor air. The Environmental Protec-

tion Agency estimates there are 22,000 lung cancer deaths in the U.S. each year due to radon exposure.

A two-part proceedings* of the 29th Hanford Symposium on Health and the Environment provides a comprehensive review on the role of radon in the etiology of lung cancer. Those interested in radon will find the proceedings of value according to a book review by Dr. Peter J. Baxter of the University of Cambridge School of Clinical Medicine.

Dr. Baxter notes the problems faced by regulators. He cites one example of a multimillion dollar apartment building being demolished because the indoor radon air level was 4.3 pCi/liter. This slightly exceeded the EPA guideline limit of 4.0. The legal liability was judged to be too great by the building owners.

*Cross FT (ed.). *Indoor radon and lung cancer: Reality or myth? Parts I and II. Twenty-ninth Hanford symposium on health and the environment, October 15-19, 1990. Columbus: Battelle Press, 1992.*

Question:

What accounts for 30% of all illnesses in the workplace?

Answer:

Chemically caused dermatitis accounts for about 30% of all occupational illness. Ninety percent of the cases are dermatitis due to either contact irritation or contact allergy.*

*Contact dermatitis and urticaria from environmental exposures. *Am Family Physician* 1993; 48: 773-780.

Seven Questions to Ask When Determining Work Related Illness or Injury*

1. Are symptoms consistent with the diagnosis?
2. Are the signs consistent with the exposure?
3. Is the temporal relationship of exposure and disease clear?
4. Do fellow workers with similar exposure have similar problems?

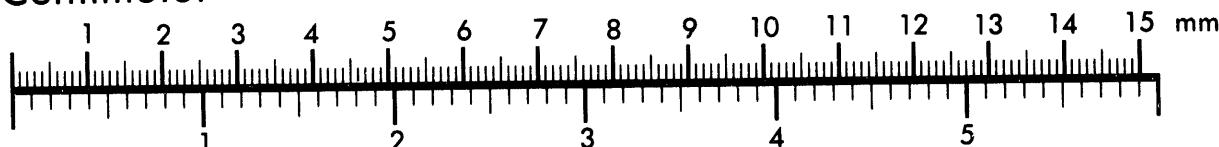


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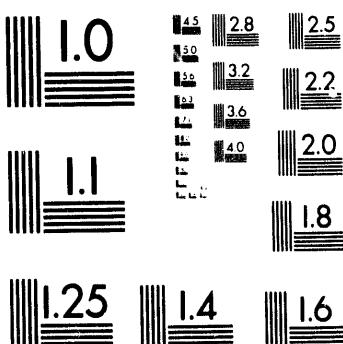
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5. Is workplace monitoring data available and indicative of the suspected exposure?

6. Is the condition biologically plausible and confirmed?

7. Is there a lack of non-occupational exposure to the toxic agent?

* Welter ES. *The role of the primary care physician in occupational medicine: Principles, practical observations, and recommendations.* In Zenz C (ed). *Occupational medicine: Principles and practical applications (2nd ed).* New York: Year Book Medical; 1988.

Pregnant Physical Therapists and Diathermy Units

Physical therapists are exposed to radio and microwave electromagnetic radiation when operating shortwave and microwave diathermy units. Previous studies have suggested a link between the use of diathermy units to an excess risk of birth defects, perinatal deaths and late spontaneous abortions among the offspring of exposed female therapists.

A recent study* based on over 19,000 respondents to a questionnaire survey has provided additional evidence for the risk. This study found "... women who reported using microwave diathermy at the time of conception were at greater risk of miscarriage. The risk increased with increasing exposure, and persisted even when known confounders were taken into consideration in the analysis.

Whether the excess risk is associated directly with the use of microwave diathermy per se or with something closely related to its use has yet to be determined. Women who reported using shortwave diathermy were not at increased risk.*

*Quellet-Hellstrom R and Stewart WF. *Miscarriages among female physical therapists who report using radio- and microwave-frequency electromagnetic radiation.* Am J Epidemiology 1993;138:775-786.



An Additional Source of Lead Exposure for Children?

Paraoccupational exposure occurs when workers exposed to a contaminant inadvertently transport it home or to some other site. Usually the contaminant is transported on their body or clothing. Nonworkers, and particularly household members, then become exposed to the contaminant.

A limited study* of electric-cable splicers has demonstrated

that the workers have contaminated their homes with lead and tin from their work. House dust collected in their homes were compared with controls from the neighborhood. Dust samples were collected from two areas of each study home; one from the laundry room and one composite sample from the rest of the house.

Lead measurements in the splicers' laundry rooms and composite dust samples from the splicers' homes were statistically higher than in the controls. The geometric mean of the splicers' laundry room dust samples was 1,021 ppm as compared to the neighborhood's 390 ppm. The lead levels of the composite samples were respectively, 585 ppm and 329 ppm. The geometric mean of the tin levels found in the splicers' laundry and composite dust samples were also significantly higher than those observed in the controls.

The authors recommended that work clothing worn by electric-cable splicers should remain at work and be laundered professionally. Screening of blood lead levels in the splicers and in their children under age seven was also advised.

*Rinehart RD and Yanagisawa Y. *Paraoccupational exposures to lead and tin carried by electric-cable splicers.* Am Ind Hyg Assoc J 1993; 54: 593-599.

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Volume 1 No. 9
April 1, 1994

Samuel T. Caldwell, Editor
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EMCC Meeting Summary

The EMCC met at the Beach Cove Resort in North Myrtle Beach on March 11. Drs. Martin Jones and Alan Smith of the MUSC Environmental Hazards Assessment Program were guests of the committee. Meeting highlights included:

► Dr. Mark Godenick displayed a poster on the three environmental and occupational medicine (EOM) research projects completed by the committee last fall. These include the *EOM Curriculum Survey*, *Patient Chart Review for EOM*, and *EOM Survey of Family Medicine Residents*. The poster was displayed at the South Carolina Area Health Education Consortium meeting which was also held at the Beach Cove Inn.

Mark will prepare for publication a summary report on the three projects.

► The EMCC agreed to collaborate on a fourth research project. Each of the seven residency sites will survey a random sample of graduates for: 1) information on the

extent of EOM in their practice, and 2) opinions on residency curriculum that would have better prepared them for EOM in their practice.

Dr. Schuman will design a questionnaire and sampling scheme. These will be sent to the EMCC members for review and comment. Dr. Bill Simpson agreed to coordinate the survey and to prepare a report for publication.

► The committee reviewed the five EOM longitudinal core curriculum modules consisting of slide lectures with scripts and interactive computer programs. Comments and suggestions from the committee will be incorporated into version 1.0 of the modules.

The committee agreed to merge the risk communication and EOM patient encounter modules. The EOM longitudinal core curriculum modules now include: 1) *EOM History for Family Physicians*, 2) *Communicating Environmental & Occupational Risks to Patients: A Guide for the Family Physician*, 3) *EOM Resources for the Family Physicians*, 4) *EOM in*

Private Practice: Choices for the Family Physician, and 5) *EOM Site Visit*.

The first four modules are being updated with the committee members' comments and suggestions. The site visit module is being developed with the assistance of Dr. Woody Woodall. It will focus on the hospital as a location for an efficient EOM site visit for residents.

► The EMCC asked Dr. Schuman to present a report on the committee's progress at the next directors' meeting of the Statewide Family Practice Residency System. The meeting is scheduled for May 14 in Columbia.

► The EMCC accepted Dr. Schuman's proposal to use the resources of his Occupational and Environmental Medicine Office (OEMO) for consultation and clinical case research on EOM. These services will be provided at no charge. Rotary file cards and business cards describing the OEMO services will be printed and distributed to the committee. Committee members will then advise their

faculty and residents of the service.

The objective of the service is to integrate family practice with the preventive approach to EOM and to document case studies for curriculum development.

► The EMCC requested that Dr. Schuman's lecture on cluster epidemiology be developed into a curriculum module. This lecture along with an interactive computer program will be added to the EOM elective curriculum as a component of the *Low Dose Risks* module.

► The next committee meeting will be held at the Sheraton Hotel and Convention Center in Columbia on September 15-16. Objectives for the meeting include (1) the much-needed participation of one or two residents from each site, and (2) review of the EOM elective curriculum.

Birth Defects Clusters*

The California Birth Defects Monitoring Program has been investigating community reports of birth defects clusters since 1983. To date the program has evaluated 130 reports, most of which were received from clinicians.

No excess for a specific birth defect was found in 95% of the cases. An excess in a specific birth defect was observed in the remaining cases. However, after further epidemiologic study, not a single new teratogen was identified.

Investigation of cluster reports are important for two reasons: 1) most human teratogens have first been identified by a clinician following up a reported cluster of cases, and 2) investigations that show no excess for a birth defect or no association can help overcome public fears. The second reason is very important because the investigation may help to focus the community's attention on a more likely environmental or personal exposure.

The authors note that successful cluster investigations such as cataracts and rubella, phocomelia and thalidomide, and spina bifida and valproic acid have three features in common:

First, there is a large excess of the same defect. A cluster investigation cannot detect a small increase of the relatively rare or infrequent birth defect. Only a large epidemiologic study is likely to do so.

Second, there is a biologically plausible exposure based on increased risk from epidemiologic or animal studies, timing of the exposure (organ formation during the two to 12 weeks after fertilization), and a verifiable route of exposure. A teratogen must be able to cross the placenta.

Third, there is a characteristic pattern of defects - a teratogen will not cause all birth defects to increase or embryologically unrelated birth defects to increase.

*Harris JA and Wynne JW. *Birth defects clusters: Evaluating community reports. Health & Environment Digest* 1994;7(10):1-3.

Occupational Health Nurses Seek Expansion Of Work Site Health Promotion Programs*

The American Association of Occupational Health Nurses called on Congress this month to include expanded work site health promotion programs in health care reform legislation. Eleanor Chamberlin, AAOHN Governmental Affairs Chair, said, "We have documented the effectiveness of these programs in reducing health risks and managing health care costs - the very goals that proponents of health care reform are trying to achieve."

*Nurses push work site health care programs. *Occupational Health & Safety News* 1994; 10(6):63.

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Volume 1 No. 10

May 1, 1994

Samuel T. Caldwell, Editor
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Committee Activities

► The first four environmental and occupational medicine (EOM) core curriculum modules are being updated with the suggestions made by the committee members at the March 11 meeting. The modules include: 1) *EOM History for Family Physicians*, 2) *Communicating Environmental & Occupational Risks to Patients: A Guide for the Family Physician*, 3) *EOM Resources for the Family Physicians*, and 4) *EOM in Private Practice: Choices for the Family Physician*. The fifth module, *The Hospital: EOM Site Visit for Family Medicine Residents*, is being developed.

Our goal is to distribute the modules to the committee by June 15.

► Dr. Mark Godenick has written a first draft of the EMCC research project on residents' attitudes on the need for EOM in residency training. The title is "Teaching Occupational Medicine to the Reluctant Resident (They Are Not As Reluctant As We Thought)." Stan Schuman is reviewing the

paper for Mark before it is submitted it for publication.

► The EMCC agreed at the March meeting to cooperate in a fourth research project. This is a survey of alumni for information on the extent of EOM in their practice and for their suggestions on relevant EOM curriculum in residency training.

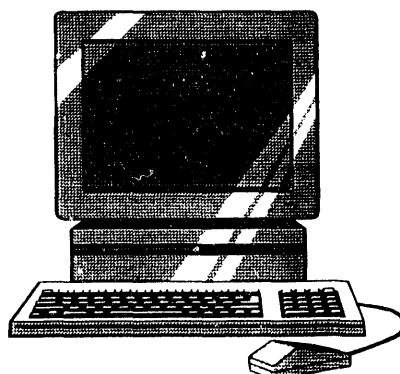
The Charleston faculty and staff have developed a questionnaire for the project and are in the process of field testing it by surveying its graduates (n=261). The questionnaire will be updated and distributed to the committee by the end of June.

► Dr. Schuman has been scheduled to speak at the meeting of the directors of the Statewide Family Practice Residency Program on Saturday, May 14 in Columbia. He will update the directors on the progress the committee has made over the past year and its plans for the next fiscal year.

► Wallet-size information cards and rotary file cards on the consultative and research services of the Occupational and

Environmental Medicine Office are being printed. A supply will be provided to each committee member for distribution to their respective faculty and residents.

► The MUSC Environmental Hazards Assessment Program has purchased a Macintosh computer for the Occupational and Environmental Medicine Office. This will now enable the staff to prepare interactive computer programs in the Mac format as well as the current IBM/compatible PC format.



The Mac Authorware® interactive programming software has been ordered. It is planned for Mac versions of the longitudinal curriculum models to be distributed to the committee by the end of the summer.

Toxic Threat and Coping*

It is known that in addition to the physical health problems experienced by people involuntarily exposed to toxic materials, the patients may also experience emotional disorders. Most data are from studies conducted after the hazardous chemical or waste spill, explosion or fire has occurred.

Researchers have studied the symptomatology of volunteers who lived within a two-mile radius of the *projected placement* of a dump site for radium industrial by-products. A total of fifty residents responded to the questionnaire survey. The subjects were asked to report symptoms and any changes in eating, sleeping, smoking, drinking, depression, anger, and anxiety. The participants were also asked to document any personal actions taken to deal with the placement of the dump site.

Not surprisingly, all participants opposed the local siting of the proposed dump. Many participants reported symptoms of distress. For example, 43% reported more anxious feelings and 64% reported more angry feelings. The extent of the participants' actions in dealing with the dump were not significantly predictive of their symptoms. Significant predictors of the symptoms included intrusion, avoidance and sense of control. The participants were divided into three groups:

"inactives" who carried out no behaviors in opposition to the dump; "participants" who supported (signed petitions or donated money) to a local organization opposed to the dump; and "initiators" who actively opposed the dump by writing letters and making phone calls.

There was no statistical difference in the total number of symptoms between the groups, although the inactive participants tended to have fewer symptoms. Individuals from the three groups were compared to the symptoms reported.

Significant differences were observed for anger and depression with 100% of the initiators reporting more angry feelings after the announcement of the dump.

This compared to only 30% of the inactives. Forty percent of the initiators reported more feelings of depression as compared to none of the inactive participants.

The authors noted that ". . . the actions taken by individuals to oppose the dump did not appear to reduce symptoms of distress, nor did more active opposers perceive themselves as possessing higher levels of control. It is possible that the higher amount of distress experienced by active individuals was what led them to their active involvement and opposition."

* Gibbs S and Belford S. *Toxic threat, coping style and symptoms of*

emotional distress. *Toxiccollegian* 1993; 2(1):1-4.

Sick Building Syndrome

The following is a list of non-building factors which have been found to correlate with a higher prevalence of sick building syndrome.*

Personal Characteristics

- higher prevalence in women
- allergic rhinoconjunctivitis
- history of migraine headache

Lifestyle & Residential Factors

- tobacco abuse
- contact lenses
- apartment living
- living with small children
- indoor climate problems in private residence

Job Category

- clerk categories
- social workers

Type of Work

- handling carbon and carbonless paper
- photocopying
- work at VDT

Psychosocial Factors

- disorganization of daily work
- lack of variety in work
- dissatisfaction with superior
- work speed
- excessive workload
- little influence on organization of work

*Bardana EJ. Chapter 21, *Building-related illness.* In: Bardana EJ et al. *Occupational Asthma.* Philadelphia: Hanley & Belfous. 1992.

ENVIRONMENTAL MEDICINE UPDATE

The Newsletter of the Statewide Family Practice Residency Program
Environmental Medicine Curriculum Committee

Anderson - Dr. H.C. Woodall
Charleston - Dr. C. D. Brock

Charleston - Dr. S.H. Schuman
Charleston - Dr. W. M. Simpson
Columbia - Dr. E.P. McCutcheon

Columbia - Dr. P.W. Stone
Florence - Dr. Dr. H.E. Terrell
Greenville - Dr. D.S. Grubbs

Greenwood - Dr. D.E. Ruiz
Spartanburg - Dr. M.J. Godanich

Volume 1 No. 11
June 1, 1994

Samuel T. Caldwell, Editor
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Committee Activities

► The pilot study of graduates from the Charleston program continues on schedule. To date, 75 alumni have responded from the total of 261 graduates surveyed.

The objectives of the study are to determine: 1) the extent of EOM in their practice, 2) suggestions for EOM curriculum in residency training, and 3) the need for EOM continuing medical education.

The concise, one page questionnaire and preliminary results of the pilot study will be distributed to the committee later this month.

► The five EOM longitudinal curriculum modules are near completion. These will be distributed to the seven family practice residency sites on or about June 15.

► The wallet-size information cards and rotary file cards describing the free consultative and research services of the Occupational and Environmental Medicine Office have been printed. These reminder cards

will also be forwarded later this month to the committee members for distribution to the faculty, residents and staff of the Statewide Family Practice Residency System.

► Committee members are reminded that the next meeting is scheduled for September 15-16 at the Sheraton Hotel and Convention Center in Columbia.

*Environmental Medicine and the Medical School Curriculum**

In 1988, a committee of the prestigious Institute of Medicine (IOM) examined the role of primary care physicians in environmental and occupational medicine.

The committee called for enhanced training and education in this area because primary care physicians are often the first contact for patients with an EOM illness.

A new IOM Committee on Curriculum Development in

Environmental Medicine has examined the need for EOM curriculum in undergraduate education. The committee believes that the principles and concepts of EOM must be taught and reinforced throughout undergraduate and postgraduate medical education in order to help physicians address emerging environmental health issues. Furthermore, the committee believes that specifying what should be taught is not as useful as describing what the students should be able to do at the end of their undergraduate training.

The committee has recommended six EOM competency-based objectives. Graduating medical students should be able to:



1. "Understand and appreciate the influence of the environment and environmental agents on human health."
2. "Elicit an appropriately detailed environmental exposure history, including work history

from all patients."

3. "Recognize the signs, symptoms, diseases, and sources of exposure relating to common environmental agents and conditions."

4. "Demonstrate an understanding of relevant epidemiologic, toxicologic, and exposure factors; provide understandable information about risk reduction strategies; and discuss environmental risks in ways that exhibit sensitivity to patients' health beliefs and concerns."

5. "Identify the informational, clinical, and other resources available to help address patient and community environmental health problems and concerns."

6. "Understand the legal and ethical responsibilities of seeing patients with occupational and environmental health problems or concerns."

**Environmental medicine and the medical school curriculum. Committee on Curriculum Development in Environmental Medicine, Institute of Medicine. Washington, D.C.: National Academy Press, 1993.*

*The Family Physician and Industrial Hygiene**

Industrial hygiene deals with the assessment of exposure to hazards in the workplace and their remediation through administrative and engineering controls and through worker behavior modification. The training and certification of an industrial hygienist prepares this specialist to make judgements about hazardous exposures and to

make recommendations for the protection of workers.

Most physicians who are providing occupational health care to their communities have not had formal training in occupational medicine. They often need help in some specialized aspect of occupational medicine. For example, treating a work related illness or injury may require a worksite assessment that the practitioner may not have the time for or the expertise to conduct efficiently.

The family physician can consult with an industrial hygienist to overcome these problems. Not only does the hygienist possess the necessary skills for worksite exposure assessment, he can save the practitioner time, and work with the physician in developing a plan to prevent worker illness and injury.

The OEMO has a list of certified industrial hygienists in South Carolina.

**Wheat JR et al. The family physician and industrial hygiene. Arch Fam Med 1994; 3:372-376.*

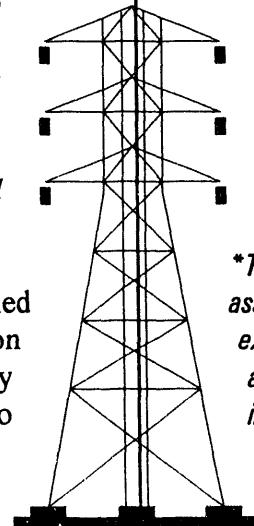
*Cancer Risk and Magnetic Fields**

Previously published studies on the association between electric utility workers' exposure to low-frequency electromagnetic fields and cancer have been inconsistent. Generally, they have shown a slight increase in the incidence of all leukemia and acute myeloid

leukemia.

A recently published study used three different cohorts of utility workers to determine whether occupational exposure to magnetic fields (50-60 Hz) was associated with cancer. Each cohort represented an independent utility corporation. The study population totaled 223,292 workers! The study period was 1970-1989 during which time 4,151 new cases of cancer occurred.

Workers who had more than the median cumulative exposure to magnetic fields had a higher risk for acute nonlymphoid leukemia (OR=2.41, 95% CI=1.07-5.44) and acute myeloid leukemia (OR=3.15, 95% CI=1.20-8.27). A non-statistically significant increased risk for brain cancer was observed among workers whose cumulative exposure was above the 90th percentile. The study found no clear dose response trends with increasing exposure to magnetic fields and no consistency among the three utilities. No other associations with magnetic fields were observed for 29 other types of cancer studied.



**Theriault G et al. Cancer risks associated with occupational exposure to magnetic fields among electric utility workers in Ontario and Quebec, Canada, and France: 1970-1989. Am J Epidemiol 1994; 139: 550-572.*

This publication is supported in part by funds from the U.S. Department of Energy grant DE-FG01-92EW50625.

AGROMEDICINE PROGRAM/EHAP
OCCUPATIONAL & ENVIRONMENTAL MEDICINE
MUSC DEPARTMENT OF FAMILY MEDICINE

JULY 1993 SUMMARY REPORT

Public Service:

Staff members consulted on 25 environmental/occupational medicine cases during the month. Seven cases involved acute and chronic exposure to pesticides: aldicarb, boric acid, baygon, chlordane, chlorpyrifos (2), and methyl bromide. Four consultations involved food safety - three on pesticide residues in the food supply and one on *Gliocladium roseum*. Allergy to insects stings and bites and insect transmitted disease accounted for six cases, botanical associated dermatitis and poisoning for three cases and two cases involved zoonotic disease. Also, there were three consultations on heat stress management.

Education:

"Quality of the American Food Supply" was presented in Smoaks, SC on July 7 to the Young Farmers Association and in Spartanburg on July 30 to the Kiwanis Club.

The following site visits were made to meet with the members of the Statewide Family Practice Residency System Environmental Medicine Curriculum Committee: July 8 - Florence, July 12 - Spartanburg, July 13 - Greenville, July 19 - Greenwood, July 20 - Anderson, July 27 - Charleston and July 30 - Columbia.

Other:

July 13 & 21 - Letters to the editor assuring the public on the quality of the American food supply were published by *The Post and Courier* and *The State* newspapers.

July 15 - Dr. Schuman testified before the U.S. House of Representatives Committee on Agriculture. He discussed the Agromedicine Program and nutrition education as well as the role of the primary care physician.

July 28 - An interview on heat stress was published in *The State* newspaper.

July 31 - "Florists' Dermatitis" interview on TV 5 Health Line featured applied research on contact dermatitis caused by alstroemeria exposure.

AGROMEDICINE PROGRAM/EHAP
OCCUPATIONAL & ENVIRONMENTAL MEDICINE
MUSC DEPARTMENT OF FAMILY MEDICINE

AUGUST 1993 SUMMARY REPORT

Public Service:

Staff members consulted on 19 environmental/occupational medicine cases during the month. Ten cases involved pesticides: eight acute and chronic toxicity consultations, one case of well water possibly contaminated with diazinon and a consultation on suspected food poisoning due to pesticide residues. Two cases involved non-pesticide chemical exposure: respiratory irritation to sulphur and contact dermatitis in a machinist exposed to various solvents. The remaining cases included two consultations on Lyme disease, two cases of brown recluse spider bites, two possible poisonings due to botanicals and a consultation on lower back pain in agricultural workers.

Education:

"Quality of the American Food Supply" was presented in Bennettsville, SC on August 11 to the Rotary Club, in Raleigh, NC on August 12 to the Pesticide Association of North Carolina, and at USC on August 31 to the freshman medical class.

"Characteristics and Implications of Tick-Borne Diseases" was presented in Wilmington, NC on August 6 at the summer convention of the NC/SC Pest Control Associations.

"Multiple Chemical Sensitivity" was presented on August 17 to the MUSC second year family medicine residents.

Dr. Schuman was interviewed on August 18 by SC ETV on the role of the primary care physician in environmental medicine. ETV is producing a series of EHAP videotapes.

Kim Denning, a MUSC Pharm. D. candidate, began a one month elective. She researched cancer and low-dose environmental contaminants with a focus on dioxin. Kim will present her findings at a pharmacy grand rounds early next year.

Other:

August 2 - A Voice of America reporter interviewed staff members in preparation for a feature story on the Agromedicine Program.

August 12 - WRAL TV, Raleigh, N.C., interviewed Dr. Schuman on food quality and the decline of stomach cancer.

AGROMEDICINE PROGRAM/EHAP
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MUSC DEPARTMENT OF FAMILY MEDICINE

SEPTEMBER 1993 SUMMARY REPORT

Public Service:

Staff members consulted on 30 environmental/occupational medicine cases during the month. Seven cases involved acute and chronic exposure to pesticides; one of which included lab support to an investigation of a possible pesticide associated death. Venomous bites and insect transmitted disease accounted for 16 cases; five spider bites, seven Lyme disease, one each for ringworm and hookworm infection, one case of delusory parasitosis and one consultation on the efficacy of electric shock for venomous snakebite. Two consultations were on common SC plant allergens and one was on allergy to cockroaches. Other cases involved farmer dermatitis, prevention of back injury in agricultural workers, a referral for a suspected tropical disease and sick-building syndrome.

Education:

Dr. Ziad Haidar, a third year MUSC family medicine resident, began a one month elective with the Agromedicine Program on September 1.

- The Environmental Medicine Curriculum Committee (EMCC) met in Columbia, SC on September 2-3. The committee initiated three research projects and began the development of environmental and occupational medicine curriculum strategies for the Statewide Family Practice Residency System.
- "Multiple Chemical Sensitivity" was presented to the EMCC faculty on September 2.
- "Agromedicine: Lessons Learned" was presented September 11 at the Educating Physicians on Occupational Health and Environment Conference hosted by The Medical Center of Georgia.
- Dr. Simpson attended the Educating Physicians on Occupational Health and Environment Conference held September 9-10 sponsored by Duke University.
- "Quality of the American Food Supply" was presented in Columbia, SC on September 16 to the SC Agricultural Council and in Hampton to the Hampton County Farm Bureau, and on September 20 in Latta, SC to the Dillon County Farm Bureau.
- "Taking a Occupational & Environmental Medicine History" and "Case Histories in Agricultural Medicine" were presented on September 22 to the second year MUSC family medicine residents.

- ▶ "Tick-borne Disease" was presented on September 30 at the Intensive Review in Emergency Medicine held in Charleston.
- ▶ Slide lectures were loaned to the following Agromedicine Program Consulting Physicians for presentations in their communities: Dr. Dominici/Clarendon County, Dr. Shealy/Hampton County, Dr. Woodall/ Anderson County, Dr. Laffitte/Aliendale County and Dr. Keisler/Richland County.
- ▶ Program staff continued work on the development of core curriculum packages on environmental/occupational medicine for the EMCC.

Research:

Staff members developed the protocols for the following EMCC projects: Environmental & Occupational Medicine Survey of Family Medicine Residents, Patient Chart Review for Environmental & Occupational Medicine, and Environmental and Occupational Medicine Curriculum Survey.

AGROMEDICINE PROGRAM/EHAP
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OCTOBER 1993 SUMMARY REPORT

Public Service:

Staff members consulted on 26 environmental/occupational medicine cases during the month. Seven cases involved pesticides: two acute poisonings (boric acid and fosamine ammonium); three chronic exposures cases with each involving several organophosphate insecticides; and two consultations with farm women on pesticide exposure and birth defects. Occupational and home exposure to other chemicals included benzene, formaldehyde, lead, pentane, arsenic and an unknown toxin used in an intentional poisoning. Venomous bites and insect transmitted disease accounted for 12 cases: Lyme disease (6), brown recluse (1), red imported fire ant (2), and insect associated dermatitis (3). Other cases included plant associated dermatitis and consultation with an occupational medicine specialist on a case of multiple chemical sensitivity.

Education:

- Don Hisnanik, a MUSC doctor of pharmacy candidate, began a one month elective with the Agromedicine Program on October 1.
- "Case Histories in Agricultural Medicine" was presented to the third year MUSC family medicine residents on October 4.
- "Quality of the American Food Supply" was presented on October 7 to the Barnwell County Farm Bureau, on October 13 to the Kingstree Master Gardeners and on October 28 in Beaufort at a community breakfast in recognition of Farm-City Week.
- "Cluster Epidemiology" was presented to the third year MUSC family medicine residents on October 26.
- The Department of Family Medicine sponsored the travel of Dr. Robert Anderson to the State of the Art Conference on Core Curriculum in Environmental Medicine. The conference was held October 25 through 29 in Dallas and was sponsored by the American College of Occupational and Environmental Medicine.
- Program staff continued work on the development of core curriculum packages on environmental/occupational medicine for the Environmental Medicine Curriculum Committee.

Research:

Staff members began collating EMCC project reports (Environmental & Occupational Medicine Survey of Family Medicine Residents, Patient Chart Review for Environmental & Occupational Medicine, and Environmental and Occupational Medicine Curriculum Survey) from the seven family medicine residencies.

AGROMEDICINE PROGRAM/EHAP
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MUSC DEPARTMENT OF FAMILY MEDICINE

NOVEMBER 1993 SUMMARY REPORT

Public Service:

Staff members consulted on 11 environmental/occupational medicine cases during the month. Four cases involved pesticides: a cancer patient with chronic pesticide exposure, a child exposed to boric acid, a probable case of multiple chemical sensitivity involving chlorpyrifos, and several children exposed to well water contaminated with chlordane. Remaining toxicologic consultations included arsenic poisoning of unknown etiology and food-borne toxins. Two consultations involved Lyme disease: one involved a local industry with several troubling cases involving workmen's compensation. Other consultations included macular retinopathy due to arc welding, oxygen deficiency in grain bins and a cluster of patients with scurvy.

Education:

- ▶ "Quality of the American Food Supply" & "Tick-Borne Disease" were presented on November 5 at the annual meeting of Terminix managers and employees held in Myrtle Beach.
- ▶ "Quality of the American Food Supply" was presented on November 19 at the annual meeting of the Tobacco Growers Association, on November 22 at a meeting of the Southern Association of the State Departments of Agriculture held at Brosnan Forest and at the 1993 Farm-City Week Banquet in Dillon.
- ▶ Program staff continued work on the development of core curriculum packages on environmental/occupational medicine for the Environmental Medicine Curriculum Committee. Authware,® software for interactive programming, was received on November 30. This program will be used in curriculum development.
- ▶ The USDA videotape on food quality for physician education was re-edited to improve focus and to use less time.

Research:

- ▶ Staff members finished the collation of EMCC project reports (Environmental & Occupational Medicine Survey of Family Medicine Residents, Patient Chart Review for Environmental & Occupational Medicine, and Environmental and Occupational Medicine Curriculum Survey) from the seven family medicine residencies. A draft report will be submitted to the EMCC at its next meeting December 2-3, 1993 in Columbia.
- ▶ The first issue of the scientific quarterly, *Journal of Agromedicine*, was presented at the eighth meeting of the Southern Agromedicine Consortium held at Emory University on November 8-9.

MUSC DEPARTMENT OF FAMILY MEDICINE
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DECEMBER 1993 SUMMARY REPORT

Public Service:

Staff members consulted on 12 environmental/occupational medicine cases during the month. Seven cases involved pesticides: a peach orchard sprayer with liver disease, the interpretation of ChE analyses for horticultural workers, recommendations for the use of pesticide labels in the management of acute poisonings, and four acute/chronic poisonings (cythioate, chlordane, 2,4,5-T and methyl bromide.) Remaining toxicological consultations included nitrites in food and tannic acid used as a spray to neutralize allergens. One consultation involved Lyme disease and another involved a suspected black widow spider bite. There was one case on allergic contact dermatitis from house plants (red milk bush).

Education:

- The Environmental Medicine Curriculum Committee met December 2-3 in Columbia. The committee approved an outline for longitudinal and elective EOM curriculum for the family medicine residencies. The committee endorsed the development of the longitudinal curriculum as soon as possible.
- "Pesticide Safety" was presented on December 15 at the USDA Vegetable Laboratory in Charleston for technicians, researchers, and maintenance crew.
- "Quality of the American Food Supply" was presented on December 16 at Leadership Trident Environmental Session in Charleston. This was part of an environmental awareness seminar coordinated by the University of Charleston.

Research:

Three EMCC projects were completed: Environmental & Occupational Medicine Survey of Family Medicine Residents, Patient Chart Review for Environmental & Occupational Medicine, and Environmental and Occupational Medicine Curriculum Survey. The results of these projects were presented to the EMCC December 2-3 in Columbia.

MUSC DEPARTMENT OF FAMILY MEDICINE
OCCUPATIONAL & ENVIRONMENTAL MEDICINE
AGROMEDICINE PROGRAM/EHAP

January 1994 SUMMARY REPORT

Public Service:

Staff members consulted on 11 environmental/occupational medicine cases during the month. These included five cases of suspected acute or chronic pesticide toxicity. Other cases included an occupational exposure to a variety of solvents, a child exposed to lead-based paint, community exposure to dioxins from incinerator emissions, an office worker with sick-building syndrome, a child diagnosed with environmental allergy and the use of vanadium as a vitamin supplement.

Education:

January 6 - "Multiple Chemical Sensitivity" was presented at the 1994 Agricultural Nutrient and Pest Management School in Columbia, SC.

January 14 - "Insect Stings and Spider Bites" was presented to the Westvaco Timberlands Division employees in Summerville, SC.

January 19 - "Herbicides and Health Effects" was presented at the 1994 Turfgrass Management and Grounds Maintenance Conference in Columbia, SC.

January 28 - "Multiple Chemical Sensitivity" was presented at the annual meeting of the SC Aerial Applicators Association in Myrtle Beach, SC.

► Program staff continued work on the development of five core curriculum modules on environmental/occupational medicine for the Statewide Family Practice Residency System.

► The MUSC Health Communications Network completed production of the videotapes "The American Food Supply: Quality and Safety," designed for physician continuing education, and "The Quality of the American Food Supply" designed to educate consumers on safe food handling practices. These are currently being evaluated by patients and physicians around the state.

Research:

Dr. Zaid Haydar, in completion of his elective rotation with the Agromedicine Program, completed a review and evaluation of the medical literature for neurotoxic effects of organophosphate exposure. This review will be submitted for publication.

Other:

January 19 - At the request of the SC Farm Bureau, Dr. Schuman testified before a SC House Agriculture Subcommittee. A committee was hearing testimony on a bill to prohibit the disparagement of food products.

MUSC DEPARTMENT OF FAMILY MEDICINE
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February 1994 SUMMARY REPORT

Public Service:

Staff members consulted on 17 environmental/occupational medicine cases during the month. These included four cases of suspected acute or chronic pesticide toxicity (chlorpyrifos, thidiazuron, bromethalin / triethyltin & a variety of OPs). Three cases involved exposure to other chemicals: PCBs, dioxin and a stump remover. Six consultations were on insect associated illness: two Lyme disease cases, two cases of brown recluse spider bites, a patient with fire ant sting allergy, and a scorpion sting. Other cases included dermatitis in a textile mill worker, green tobacco sickness, nicotine levels in a dairyman, and food safety consultation for the Farm Bureau and state legislature.

Education:

February 4 - "Multiple Chemical Sensitivity" was presented to the first year MUSC family medicine residents.

February 8 - "Quality of the American Food Supply" was presented at the annual banquet of the York County Cattlemen's Association.

February 8 - "Agricultural Related Illnesses" was presented at the FLASH meeting held at the Pee Dee research & Education Center.

February 9 & 10 - "Arthropods of Medical Significance" was presented twice at the 1994 Pest Control Operators School in Columbia.

February 14 - "Global Hunger and IPM" was presented to a class on ethics for MUSC students.

February 14 - "Implications of the Delaney Clause" was presented to a MUSC class on environmental policy.

February 17 - "Arthropods of Medical Significance" was presented to the MUSC doctor of pharmacy candidates.

► Program staff continued work on the development of five core curriculum modules on environmental/occupational medicine for the Statewide Family Practice Residency System.

► The MUSC Health Communications Network completed production of the videotapes "The American Food Supply: Quality and Safety," designed for physician continuing education, and "The Quality of the American Food Supply" designed to educate consumers on safe food handling practices. These are currently being evaluated by patients and physicians around the state.

► Dr. Schuman chaired the first annual departmental committee report on faculty career development for Dr. Hutson and Dean McCurdy.

► Galleys were completed for the second quarterly issue of the *Journal of Agromedicine* to be published in the spring of 1994.

MUSC DEPARTMENT OF FAMILY MEDICINE
OCCUPATIONAL & ENVIRONMENTAL MEDICINE
AGROMEDICINE PROGRAM/EHAP

MARCH 1994 SUMMARY REPORT

Public Service:

Staff members consulted on 12 environmental/occupational medicine cases during the month. Seven cases involved chemical exposure; six cases of suspected acute or long-term pesticide health effects and one case involving polyurethane. Three consultations were on insect associated illness; two Lyme disease cases and one case of delusory parasitosis. Other cases involved a bee keeper with lowering resistance to bee stings and a dairy farmer concerned over the health of his cows that graze underneath high voltage power lines.

Education:

Lectures Presented

March 3 - "Signs and Symptoms of Pesticide Poisoning" was presented at a CES meeting on worker Protection Standards held in Charleston.

March 9 - "Stress in Farm Families" was broadcast statewide on the Health Communications Network for physician continuing medical education.

March 15 - "The Visual Display Terminal and Its Possible Health Effects" was presented to the MUSC family medicine residents.

March 24 - "Recent Successful Treatment of Delusional Parasitosis" was presented at the joint annual meeting of the GA & SC Entomological Societies held in Charleston.

Other Educational Activities

March 1 - Paul Meisner, a MUSC doctor of pharmacy candidate, began a one month elective with the OEMO. Paul drafted lectures on two low-dose environmental exposures; radon and VDTs.

March 11 - The Environmental Medicine Curriculum Committee met in North Myrtle Beach to review and comment on the five longitudinal curriculum modules. The revision of the modules is in progress and active participation by at least one resident from each family practice program is planned.

Other:

March 23 - Dr. Schuman participated in a meeting of the Agricultural Advisory Committee for Charleston County.

March 31 - Dr. Schuman advised the Farm Bureau and a sub-committee of the SC Senate Agriculture & Natural Resources on food safety issues.

MUSC DEPARTMENT OF FAMILY MEDICINE
OCCUPATIONAL & ENVIRONMENTAL MEDICINE
AGROMEDICINE PROGRAM/EHAP

APRIL 1994 SUMMARY REPORT

Public Service:

Staff members consulted on 13 environmental/occupational medicine cases during the month. Seven cases involved chemical exposure; five cases of suspected acute or long-term pesticide health effects, one case of chronic exposure to an industrial solvent and one case of chemically induced dermatitis. Three consultations were on insect associated illness: one suspected brown recluse spider bite, one fire ant allergy and one suspected Lyme disease. Other consultations included farm trauma, alstroemeria induced dermatitis in a florist, and mushroom grower's lung disease.

Education:

Lectures Presented

April 6 - "Quality of the American Food Supply" - environmental science class at Trident Technical College, North Charleston, SC.

April 8 -- "Quality of the American Food Supply" - National meeting of Executives of State Nursery Associations, Charleston, SC.

April 9 - "Quality of the American Food Supply" - Processed Apples Institute, Amelia Isle, FL.

April 12 - "EOM Hazards of the Hospital Workplace" - noon conference, MUSC Family Medicine.

April 21 - "Multiple Chemical Sensitivity: Can it Affect Your Community?" - Agricultural Appreciation Banquet, Newberry, SC.

April 22 - "Clinical Aspects of Multiple Chemical Sensitivity" - Lovelace Family Practice Center, Newberry, SC.

April 28 - "Update Ehrlichiosis" - noon conference, Orangeburg Regional Medical Center, Orangeburg, SC.

Other:

April 18-20 - Dr. Schuman attended zoonoses and food safety presentations at the 43rd Annual Epidemic Intelligence Service Conference, CDC, Atlanta.

April 25-26 - Dr. Schuman and Jan Lay attended the spring meeting of the Southern Agromedicine Consortium held at the University of Kentucky.

**MUSC DEPARTMENT OF FAMILY MEDICINE
OCCUPATIONAL & ENVIRONMENTAL MEDICINE
AGROMEDICINE PROGRAM/EHAP**

MAY 1994 SUMMARY REPORT

Public Service:

Staff members consulted on 23 environmental/occupational medicine cases during the month. Ten cases involved chemicals: nine cases of suspected acute or long-term pesticide health effects and one case of multiple chemical sensitivity to a variety of chemicals. Ten consultations were on insect associated illness: one suspected brown recluse spider bite, four tick-transmitted diseases, and one each for bed bugs, hook worm, anaphylaxis to book lice, delusory parasitosis, and a blow fly myiasis. Three other consultations focused on food quality issues.

Education:

Lectures Presented

May 3 - "Cluster Investigation of Environmental Illness" -MUSC dental graduate students.

May 5 - "Insect Pests and Related Diseases" - Westvaco Timberlands Division employees.

May 11 - "Why do Farmers differ from Non-Farmers in Mortality?" - MUSC/AHEC Telecast

May 16 - "CDC Investigation of Tomatoes Contaminated with Salmonella S. Montevideo" - SC Tomato Association.

May 17 - "EOM Illness- Child Day Care Worker as a Patient" - MUSC Family Medicine

May 20 - "Venomous Insect Stings and Bites Including Scorpion" - Emergency Department, US Naval Hospital.

EOM Longitudinal Curriculum Modules

Staff members continued work on the five EOM curriculum modules. Slide lectures with scripts were completed and interactive pc programs were being updated. The completed modules will be distributed in June to the seven family practice residency training sites.

Other:

May 12 - Staff members participated in an EHAP review of the last Crossroads for Humanity community meeting.

May 14 - Dr. Schuman presented a status report on the progress of the Environmental Medicine Curriculum Committee to the directors of the Statewide Family Practice Residency System.

May 20 - Dr. Todd Stong, an EHAP contractor with the Coleman Research Corporation, met with program staff to discuss EOM experiences in rural areas.

**MUSC DEPARTMENT OF FAMILY MEDICINE
OCCUPATIONAL & ENVIRONMENTAL MEDICINE OFFICE
AGROMEDICINE PROGRAM/EHAP**

JUNE 1994 SUMMARY REPORT

Public Service:

Staff members consulted on 25 environmental/occupational medicine cases during the month. Eleven cases involved chemicals: eight cases of suspected acute or long-term pesticide health effects. Two cases involved consultations on unknown environmental toxins and one consultation involved mercury contaminated water. Six consultations were on insect associated illness: one spider bite; two Lyme disease; two suspected cases of ehrlichiosis; and one localized reaction to an unidentified insect. Others consultations included three cases of delusory parasitosis, two toxic plant identifications, and one case each of cutaneous sporotrichosis and rabies.

Education:

Lectures Presented/Group

- June 3* - "Cluster Epidemiology: Investigation of Reputed Environmental Illness" - USC Department of Family Medicine, Richland Memorial Hospital.
- June 6* - "Diet and Cancer Prevention" - Spartanburg County Ag Appreciation Banquet.
- June 9* - "Quality of the American Food Supply" - Trident Technical College.
- June 14* - "Quality of the American Food Supply" - Association of Southern Feed, Fertilizer and Pesticide Control Officials.
- June 17* - "Communicating EOM Risks to Your Patients" - Intensive Review of Family Medicine.
- June 18* - "Tick-Borne Diseases" - Intensive Review of Family Medicine.
- June 21* - "Insect Stings and Bites" - Governor's School.

Other Educational Activities

- June 22* - Talk radio interview on "Diet and Cancer" with WBCU (Union, SC).
- June 28* - "Food Epidemiology Update from Tomato Growers" at IFT annual meeting in Atlanta.
- June 30* - The longitudinal EOM curriculum modules were distributed to the seven family practice residency training sites. Each module consists of teaching slides, script, and interactive pc program. The module titles are : 1 - Environmental and Occupational Medicine History for Family Physicians, 2 -Communicating Environmental and Occupational Risks to Patients: A Guide for the Family Physician, 3 -Environmental and Occupational Medicine Resources for the Family Physician, 4 -Environmental and Occupational Medicine in Private Practice: Choices for the Family Physician, and 5 -Using Hospital Site Visits for Teaching Environmental and Occupational Medicine.

Research:

- June 30* - The survey of alumni of the MUSC Department of Family Medicine was completed. The objectives of the study are to determine: 1) the extent of EOM in their practice, 2) suggestions for EOM curriculum in residency training, and 3) the need for EOM continuing medical education.

Other:

- June 1* - The Agromedicine Program hosted the 1994 Spring Agribusiness Tour.
- June 15* - Five papers from MUSC/Clemson faculty appeared in Volume 1, No.3 issue of the *Journal of Agromedicine*.

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10/18/94

END

