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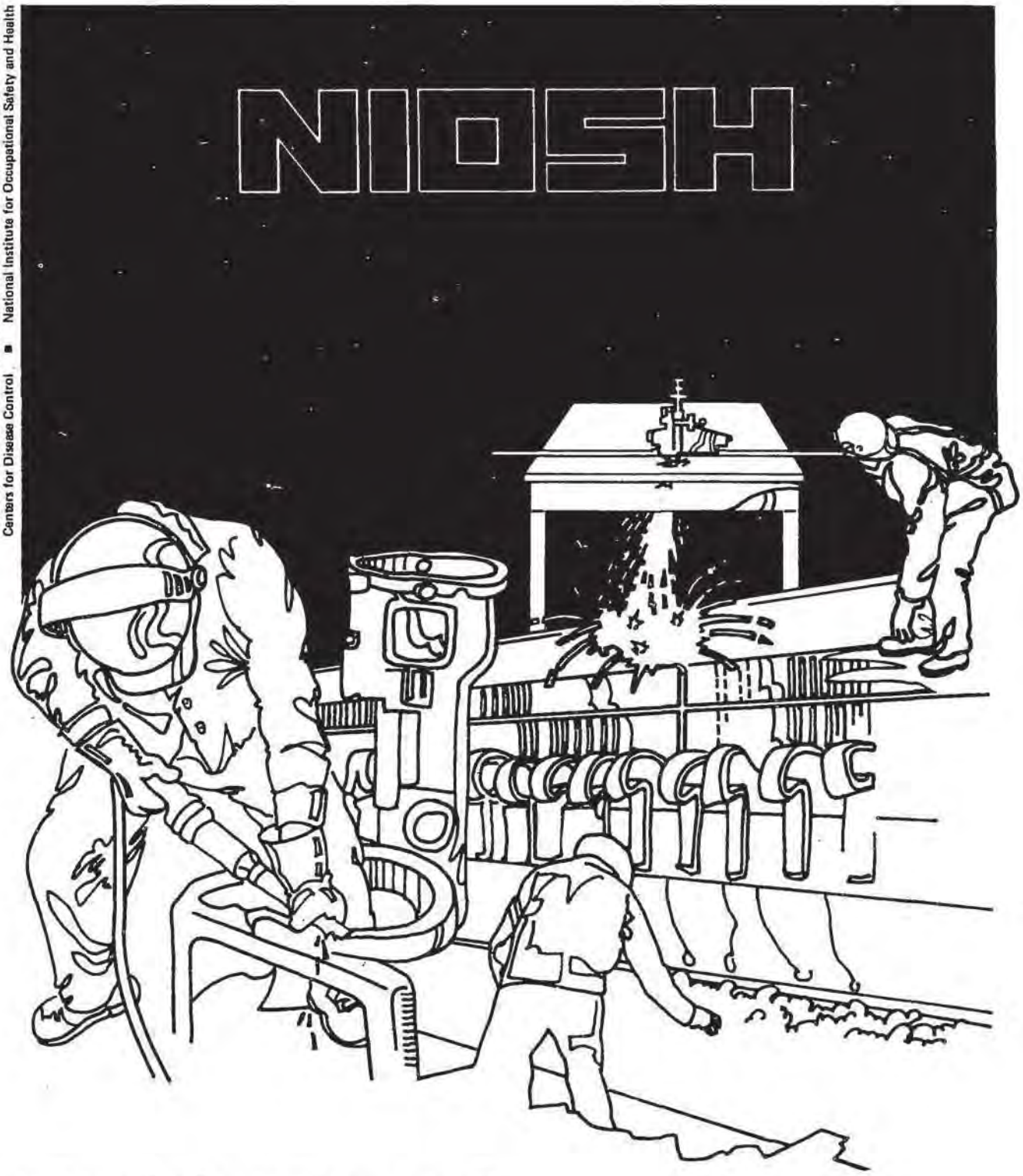
NIOSH



Health Hazard Evaluation Report

HETA 83-124-1265
CINCINNATI TIME RECORDER
CINCINNATI, OHIO

PREFACE

The Hazard Evaluations and Technical Assistance Branch of NIOSH conducts field investigations of possible health hazards in the workplace. These investigations are conducted under the authority of Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669(a)(6) which authorizes the Secretary of Health and Human Services, following a written request from any employer or authorized representative of employees, to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The Hazard Evaluations and Technical Assistance Branch also provides, upon request, medical, nursing, and industrial nygiene technical and consultative assistance (TA) to Federal, state, and local agencies; labor; industry and other groups or individuals to control occupational health hazards and to prevent related trauma and disease.

HETA 83-124-1265
FEBRUARY 1983
CINCINNATI TIME RECORDER
CINCINNATI, OHIO

NIOSH INVESTIGATORS:
Clifford L. Moseley, C.I.H.
Steven Fox, M.D.
George Lovett, M.D.

I. SUMMARY

On January 26, 1983, the National Institute for Occupational Safety and Health (NIOSH) received a request from Cincinnati Time Recorder, Cincinnati, Ohio, to evaluate a recent increase in the occurrence of dermatitis among employees assembling parking gate components.

On January 27, 1983, a NIOSH industrial hygienist and medical officer, and a dermatologist from the University of Cincinnati, met with company officials and conducted a walk-through inspection of the workplace, and privately interviewed each worker who had complained of a skin rash.

Nine workers (eight females and one male) were interviewed and their skin examined. With the exception of one worker, all had medical manifestations of dry skin. Five workers had xerosis (dry, red skin); one had pityriasis alba (dry pruritic, scaling spots); and one had erythema crackele (lines of redness in a reticulated pattern). One worker, who complained only of itching, had normal skin. The last worker had a non-specific intertrigo of the popliteal fossae (irritation as a result of the skin of the lower and upper leg behind the knees remaining in close contact).

Visual examination of the workplace revealed no work process which under normal conditions would be expected to generate harmful amounts of physical or chemical irritants. Further, although many of the chemicals used in this workplace can cause dermatitis, the possibility of allergic contact dermatitis appears to be small and the skin examinations did not reveal evidence consistent with either chemical or physical agent exposure. Many of the patients used a bathroom soap at work that they regarded as excessively harsh. However, not all of the nine used this soap.

Measurements in various locations in the workplace revealed a relative humidity (RH) ranging from 20-23% (20% in the location where the majority of complaints originated). Recommended R.H. values for general factory comfort are 30-35%.

Based on employee interviews and examinations which indicated dry skin complaints, the low moisture content of the workplace air, and the apparent lack of circumstances affording common physical or chemical agent contact, NIOSH determined that a health hazard associated with the work process was not responsible for the increased reporting of skin problems.

Recommendations relating to conditioning of the air, material substitution, general maintenance, and good work practice are presented in Section VI of this report.

KEYWORDS: SIC 3622 (Industrial Controls), Skin Rash, Relative Humidity.

II. INTRODUCTION

On January 26, 1983, NIOSH received a telephone request for technical assistance from the management of Cincinnati Time Recorder, a unit of General Signal, Cincinnati, Ohio, to evaluate an increased incidence of skin problems. On January 27, 1983, an investigative team consisting of an industrial hygienist and medical officer from NIOSH, and a dermatologist from the University of Cincinnati, visited the establishment. A walk-through evaluation of the Parking Gate and Time Recorder Assembly Departments was conducted, and private interviews held with those employees complaining of skin problems. On January 28, 1983, the industrial hygienist returned to take environmental measurements.

III. BACKGROUND

Cincinnati Time Recorder is an assembler of electronic time recording parking gates such as those seen at airport parking areas. At the time of the evaluation, Cincinnati Time Recorder employed approximately 300 people, although in the Parking Gate Assembly Department where 89% (8/9) of the health complaints originated, there were only approximately 25 workers. The remaining affected employee worked in an adjacent area (Time Recorder Assembly Department, TRA) where the time recorder mechanism is assembled. There is only one shift at the present time. Employees may be assigned different work locations throughout the Parking Gate Assembly Department (although not interchangeable with TRA) shown in Figure I, depending on the work requirements.

There are no machining of metal parts, molding operations, or the like, conducted in the specified workplaces. This workplace, located on part of the third floor of the Cincinnati Time building, is one large room with various storage areas and work stations. It is not set up as a line assembly operation. There are no walls or other partitions separating the work area; the only division is that caused by storage bins and cabinets.

In one corner of the floor there is a silk screening operation for applying clock faces and other print portions of the parking gate. It is ventilated by a general exhaust system situated in one wall about 10 feet from the silk screen. This operation is manned by one employee. There is also a small paint booth with local exhaust nearby. In addition, some of the plastic coated wire is color coded prior to incorporation in the parking gate. This operation consists of mechanically looping the wire from one spool through a jar of ink and subsequently through a non-ventilated heat lamp drying chamber. It drys instantaneously and is then rewound on a spool.

The building is heated with twin gas-fired ceiling level heaters. Pedestal and other types of fans and open windows are the only means of cooling during warmer months. There is no make up air provided other than that which seeps in through doors and elevator shafts.

The work process is basically the same at all work stations where affected employees work: screwdriver-, wrench-, and plier- assisted assembly of components. Wires are manually stripped for attachment of leads or connectors. Various lubricants, adhesives, and cleaners are used at each work station. Some of these agents, or components of these agents, can cause dermatitis and skin and eye irritation; however, very small amounts of these materials are used. Inspection and packing and assembly also take place in this work area.

IV. EVALUATION METHODOLOGY

A. Environmental

A walk-through survey was conducted in order to identify either work processes or work practices which would be likely to be hazardous from a skin contact or inhalation standpoint, and which would warrant environmental sampling.

Relative humidity measurements were obtained with a Bendix battery operated psychrometer. Actual barometric pressure was used in the calculation (not corrected to sea level).

B. Medical

Nine workers were privately interviewed and examined. Eight workers were female and one was male. Eight workers (seven job coded "assembler" and one job coded "packer") worked in the Parking Gate Department; one employee worked in the Time Recorder Assembly Department.

V. RESULTS AND DISCUSSION

None of the observed work processes were judged of sufficient nature, given the small amounts of solvents and other chemicals used, to present either an inhalation hazard or skin contact responsible for the cutaneous problems reported. Consequently no personal or general area air sample for chemical exposure was performed.

The workers complaints mostly consisted of dry skin and rashes. Although the rashes were more apparent during the preceeding three days, several workers reported similar problems intermittently since November, as well as during previous winters. A few of the patients gave personal or family histories of atopic diathesis.

On examination, five workers were found to have xerosis (dry, red skin), one had pityriasis alba (dry, pruritic scaling spots - on the legs in this case), and one had erythema crackele (lines of redness in a reticulated pattern). One person, who complained only of itching, had a normal cutaneous examination. The last worker had a non-specific intertrigo of the popliteal fossae.

With the exception of the worker with intertrigo, all of the above workers' skin problems are well known as manifestations of dry skin. On inquiry, it was found that many of the patients used a bathroom soap at work that they regarded as excessively harsh. However, not all of the nine used this soap, nor were there any other contactants in common to all affected workers.

These eruptions can be caused or exacerbated by several factors, including personal susceptibility, bathing habits, humidity of the home and workplace, and the use or avoidance of harsh soaps during these activities. Environmental data concerning workplace relative humidity in part support this.

Relative humidity measurements were taken in various locations in the building and outside. These data are:

Location	% Relative Humidity	Dry Bulb, °F
outside building	68	31
personnel office	23	71
TRA department	22	74
parking and gate department	20	71

Carrier Air Conditioning Company (1) recommends that, for comfort maintenance in factory assembly areas, the relative humidity be maintained between 30-35%, with a dry bulb temperature between 68-72°F.

Attempts should be made to maintain the factory environment at the recommended environmental parameters. Those workers affected should be encouraged not to use the provided soap. A substitute, or moisturizing supplement to this soap, should be obtained. Those workers whose skin problems persist should seek attention from a physician familiar with skin diseases.

VI. RECOMMENDATIONS

Even in situations where it is believed that exposure to chemical or physical agents is below levels which might cause adverse effect, it is good practice to minimize this exposure to the greatest extent feasible. Accordingly, the first five of seven recommendations are presented with this intention.

1. Do not eat lunch or snacks, or smoke, at the work stations. These practices increase the chance that harmful materials will be ingested.

2. Replace the tops on all chemical containers immediately after each use. This will decrease the opportunity for volatile chemicals to escape into the workplace and will prevent many inadvertent spills.

3. Label all chemical containers properly. Do not place a chemical in a container for which it is not properly labeled.

4. Perform all spray painting or cleaning with solvents in the spray booth. Turn on the ventilation system and leave it running for a few minutes after the work is finished so that the booth cavity is evacuated.

5. Minimize the amount of skin surface that comes in contact with potentially irritating materials by wearing long sleeves.

6. In order to alleviate the irritating effect of dry skin caused by harsh environmental conditions (a) either replace the washroom soap presently in use with a milder, more moisturizing type, or supplement the soap with a moisturizing cream. Just about any commercial product would be appropriate. (b) Adjust the indoor relative humidity (a measure of the moisture content of the air). Carrier recommends a minimum 30-35%; we suggest a maximum of 50%. This range should allow ample room for experimentation and yet reduce the likelihood of condensation (except on cold window panes) and bacterial growth.

7. Review the work procedure and practices of the silk screen operator and evaluate the spray paint booth for proper air flow (minimum face velocity 125 feet per minute). Complaints of lightheadedness may be due to overexposure to paint and/or solvent vapors.

VII. REFERENCES

1. Handbook of Air Conditioning System Design. Carrier Air Conditioning Company (1968). pg. 1-20.

VII. AUTHORSHIP AND ACKNOWLEDGEMENTS

Report Prepared by:

Clifford L. Moseley, C.I.H.
Supervisory Industrial Hygienist
Industrial Hygiene Section

Steven H. Fox, M.D.
Medical Officer
Medical Section

George Lovett, M.D.
Occupational Health Clinic
University of Cincinnati
Cincinnati, Ohio

Originating Office:

Hazard Evaluations and Technical Assistance Branch
Division of Surveillance, Hazard Evaluations, and Field Studies

Report Typed By:

Jacqueline Grass
Clerk/Typist
Industrial Hygiene Section

X. DISTRIBUTION AND AVAILABILITY OF REPORT

Copies of this report are currently available upon request from NIOSH, Division of Standards Development and Technology Transfer, 4676 Columbia Parkway, Cincinnati, Ohio 45226. After 90 days, the report will be available through the National Technical Information Service (NTIS), 5285 Port Royal, Springfield, Virginia 22161. Information regarding its availability through NTIS can be obtained from NIOSH Publications Office at the Cincinnati address. Copies of this report have been sent to:

1. Cincinnati Time Recorder, Cincinnati, Ohio.
2. NIOSH, Region V
3. OSHA, Region V

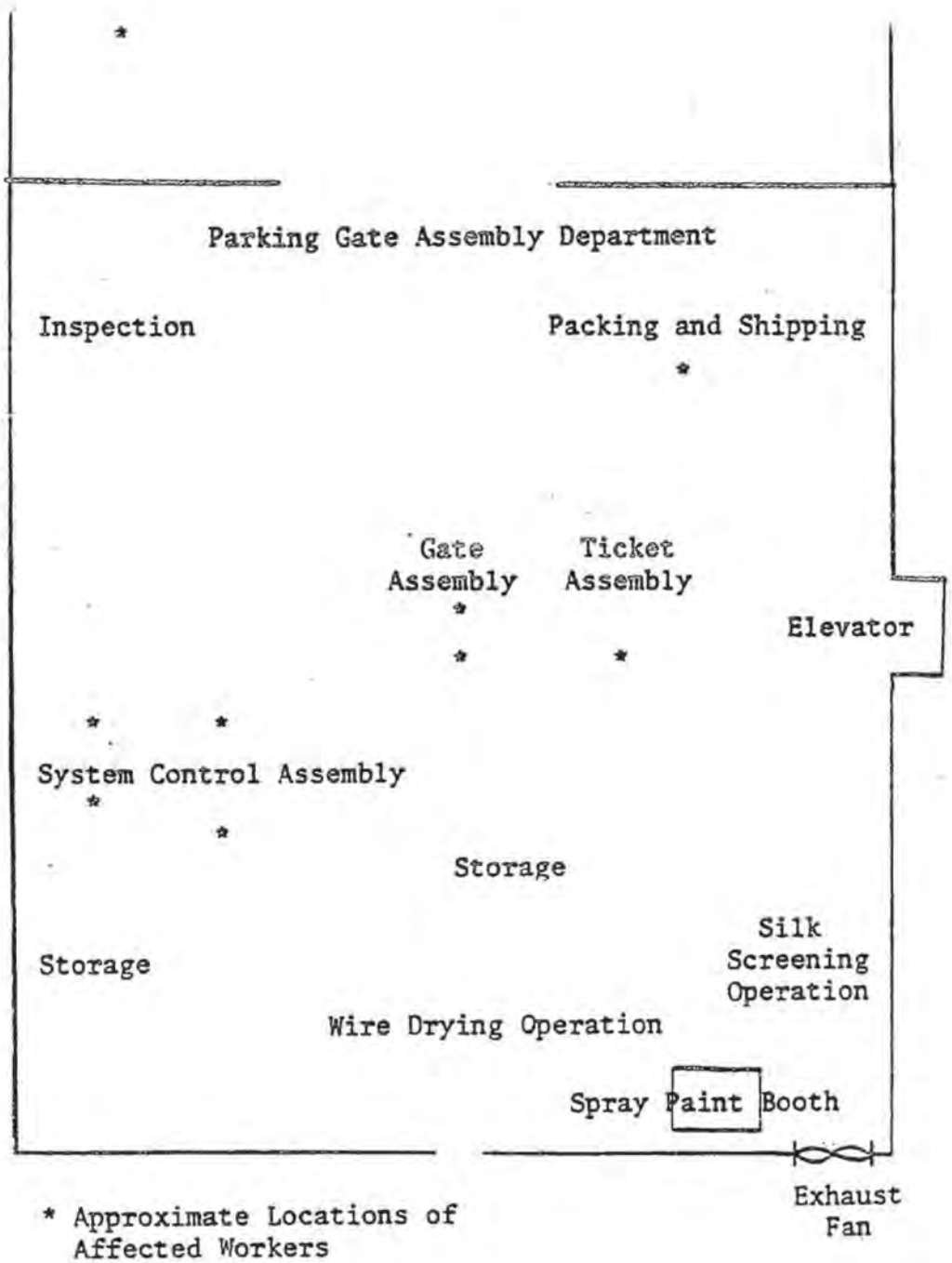
For the purpose of informing affected employees, copies of this report shall be posted by the employer in a prominent place accessible to the employees for a period of 30 calendar days.

Figure I

Layout of Parking and Gate Department

Cincinnati Time Recorder
Cincinnati, Ohio

HE 83-124



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