

FILE COPY

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45226

HEALTH HAZARD EVALUATION DETERMINATION
Report No. 76-14-408

International Brotherhood of Painters
And Allied Trades of America
Paperhangers Local Union No. 490
New York, New York

August 1977

I. TOXICITY DETERMINATION

A dermatological survey was conducted at the request of Paperhangers Local Union #490, International Brotherhood of Painters and Allied Trades of America, New York, New York. Voluntary participating members were examined by questionnaire, skin inspection and patch testing. Of the total of 211 members, 61 responded (participation rate: 28.9%) either by returning the questionnaire (37) or by appearing in person for examination (20). There were 4 retirees. Of the 57 respondents from active paperhangers, 22 met the criteria of currently experiencing occupational dermatitis because of wall paper hanging. These 22 were invited to undergo skin patch testing using various ingredients in wall paper adhesives. Twelve members completed the patch testing and six of them were found to be allergic to one or more of three biocides and/or a defoamer used in wall paper adhesives. The other six reacted negatively to the tested additives and five of them were probably experiencing chronic irritation dermatitis, possibly due to or aggravated by wallpaper adhesives, and the remaining one was probably having a non-occupational dermatitis.

Other possible factors contributing to the paperhangers' dermatoses are: chronic mechanical irritation, constant wet work, and sensitivity to wall paper material.

II. DISTRIBUTION AND AVAILABILITY OF REPORT

Copies of this Determination Report are currently available upon request from NIOSH, Division of Technical Services, Information and Dissemination Section, 4676 Columbia Parkway, Cincinnati, Ohio 45226. After 90 days the report will be available through the National Technical Information Service (NTIS), Springfield, Virginia. 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:

- a) Business Representative
Paperhangers Local Union No. 490
International Brotherhood of Painters and Allied Trades of
America
- b) The Manufacturers of Wallpaper Adhesives and Additives which
were used in patch testing
- c) U.S. Department of Labor, Region II
- d) Occupational Safety and Health Administration, U.S. Department
of Labor
- e) NIOSH - Region II

For the purpose of informing approximately 30 "affected" paperhangers, it is suggested that this report be posted in the Local Union Hall at 41 Union Square West, New York, New York 10003, for a period of 30 calendar days.

III. INTRODUCTION

Section 20 (a) (6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669 (a) (b), authorizes the Secretary of Health, Education, and Welfare, following a written request by an 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 National Institute for Occupational Safety and Health (NIOSH) received such a request from a member of the Paperhangers Local Union No. 490, New York, New York. The request stated that paperhangers were suffering from skin lesions on their hands due to contact with the "vinyl adhesives" they use, resulting in a great amount of lost working time.

IV. HEALTH HAZARD EVALUATION

A. Study Design and Progress

Since paperhangers are usually employed by various contractors for various jobs, length of which vary from one day to several months, a regular employer-employee relationship does not exist. Therefore, this evaluation was carried out with the cooperation of the Local Union involved.

1. Initial Inspection

In March 1976, the NIOSH medical officer visited three work sites in New York City to observe paperhangers' work and their skin condition.

Rolls of wall paper come in various sizes, thickness, color, and material. For the past 15-20 years, vinyl fabrics have been used increasingly. Special wall papers made with oriental silk or straw, which were favored in the past and sometimes caused dermatitis in some paperhangers, are rarely used today. Because of its increased weight, vinyl wallpaper requires a stronger adhesive material than that used for traditional wallpaper. Such adhesive is frequently called "vinyl cement." However, this is a misnomer, because vinyl compound is not usually used in their formulation. To be exact, it should be called "vinyl-wallpaper adhesive." Paperhangers have no control over what brand of adhesives to use on their job. Adhesives are purchased by the contractor.

Vinyl wallpaper adhesives are usually delivered to the work site in 5-gallon cans, premixed to a paste consistency. Since some of the water portion tends to separate on the top, it is necessary for paperhangers to mix it thoroughly before use. They do this by dipping their hand and arm into the adhesive, rather than using a wooden paddle or mechanical agitator. Sometimes, a quart or two of water is added depending on the personal preference of the paperhanger. Adhesives remaining on the skin are removed with wet towels, but often not completely. It is easily washed off the skin by running warm water, but this is not done routinely by paperhangers.

After being cut to a desired length, the wallpaper is spread out on the work table and the adhesive is applied using a paint roller. The wallpaper is then folded, pasted surfaces together, picked up by fingers at both edges and brought to the wall. After being applied on the wall, the paperhanger goes over the surface of the paper with a straight edge to assure direct and smooth contact. Finally, the excess portions are cut off by using razor blades. During this process, it is unavoidable that a small amount of adhesive sticks to fingers, hands and forearms. It may remain there during the entire work period. It was stated that paperhangers cannot work with protective gloves.

Paperhangers are usually paid by the job. Therefore, the faster they work, the more income they earn. It is also reported that the unionized paperhangers in the New York City area are unique in that they do paperhanging only, while in other parts of the country they do both painting and paperhanging.

During the initial inspection of 3 sites, a total of 10 paperhangers were interviewed. Eight of them, working together on the same large project, had no skin lesions on their hands. They stated that they had never experienced skin problems which might be caused by paperhanging. In contrast, two other paperhangers, working solo each on a different project, did have skin lesions. One type was a pinkish, scaly, psoriatic lesion suggestive of Koebner Phenomenon (appearance of psoriasis in the area of mechanical irritation). The other was a chronic eczematous lesion with dryness, cracking and fissures.

The above findings, while small in number, lead to a suspicion that other paperhangers may be experiencing dermatitis, and it was felt necessary to examine other members of the Local Union #490.

Since paperhangers do not work in one location, and since it was difficult for NIOSH staff to visit many work locations, a plan was made to examine paperhangers at their local union hall. A questionnaire was also prepared to collect epidemiological data.

2. Results of Questionnaire and Skin Examination

Since the local union refused to provide NIOSH with the list of its members, a method of taking a random sample from the members was abandoned. Instead, 240 questionnaires together with post-paid return envelopes (addressed to NIOSH) were supplied to the union. It was reported that the questionnaires were mailed to 211 active union members in the latter part of April 1976. (An active union member is not necessarily an active paperhanger.)

The questionnaire also had a cover letter urging members to respond to this survey and to report for a skin examination to be held on May 12, 1976. Therefore, response by the membership to either examination or questionnaire was voluntary. The responses are summarized in Table 1.

To identify people who were experiencing "occupational contact dermatitis", the following criteria were used:

- a) There is an occupational skin contact with certain substances potentially thought to be irritants or sensitizers.
- b) The areas of dermatitis correspond to the areas of contact or exposure.
- c) History of improvement during extended vacations or lay offs, and return of the lesions upon resumption of work.

When the above criteria were applied, three cases from the group of 25 who were experiencing skin problems, and two from the nine who had skin problems in the past were judged to have non-occupational dermatitis. Thus, 22 paperhangers met the criteria for occupational dermatitis.

Listed in Table 2 are group characteristics of paperhangers who were experiencing occupational skin problems and those who never had such problems. (It must be remembered that this is a result of voluntary response and we have no information about the true incidence of dermatitis in the paperhangers.) There seems to be no difference between these two

groups except that one group has skin problems of various duration. On the group basis, these two are comparable in their age, years of work as paperhangers, years worked with vinyl wall paper adhesives, and days worked during a recent 30-day period. Not unexpectedly, it appears that the number of days worked during a 30-day period prior to the examination are less for the skin problem group compared to the no-skin-problem group. Actually, several in the former group stated that they could not work because of skin problems. However, statistically, there is no difference between these two figures.

Table 3 contains a description of skin lesions reported by paperhangers with skin problems.

- (a) By definition, all of these 22 people had lesions on their hands. The fingers were most frequently affected, followed by the backs of hands, palms, and forearms. Other areas were affected much less frequently.
- (b) The types of lesions reported most frequently were cracking (fissures), dryness, rash, bleeding, and others in a descending order of frequency.
- (c) Subjective symptoms reported were itching (86%), burning (32%), and pain (27%).

Inspection of the skin confirmed these descriptions. Lesions could be categorized into 4 types as follows:

1. Chronic irritation
2. Possible contact allergic dermatitis
3. Possible infectious changes on the skin
4. Combinations of the above

In many cases, chronic changes with lichenification (thickening) and fissure formation were observed. In several cases, however, there were active eczematous changes with erythema and vesicle formation. Persons having lesions with psoriatic changes (silvery scales on erythematous patches) were considered to have the Koebner Phenomenon. In a few cases, concurrent lesions of fungus infection, unlikely to be directly occupation related, were also observed.

Table 4 presents the course of skin disease as reported by the 22 paperhangers.

(a) On the average, they have had the problem for about 5.6 years, but individual duration varies widely from a few months to 25 years. (Median: About 2 years) In each case, there have always been periods of improvement and worsening.

(b) By definition (p.4), all 22 men stated that the lesions go away or improve when they take a long vacation or cannot work (no job, other illness, etc.) Improvement requires a period of about 2 weeks or more away from work.

(c) After such non-exposure periods and upon resumption of paperhanging, the skin lesions return. However, no definite information on this latent period was elicited. While 6 (27%) men noticed such recurrence within 1 hour, and 4 (18%) put it between 12 hours to 2 days, the rest of the group could not specify any period.

(d) Seasonal change of the lesion was denied by a majority (91%) of the group and only 2 (9%) reported that it gets worse in winter.

(e) A history of allergy, such as eczema, hay fever, bronchial asthma or reaction to drugs, was positive for 6 men (27%), and negative for 16 men (73%). As will be mentioned later, among men who were patch tested, only one came from the group with positive allergic history. This was not unexpected since the mechanism of skin allergy differs from that causing other allergic diseases.

(f) Slightly over one-half of these 22 men had sought medical help by going to family physicians or dermatologists. The rest of the group have never sought professional medical help.

(g) Most (72%) of the paperhangers with skin problems have applied or have been applying prescribed corticosteroid ointment, and/or over-the-counter hand cream or lotion, with varying degree of relief. It was stated by all that the lesions never went away as long as they kept paperhanging.

3. Vinyl Wallpaper Adhesives

Concurrent with the dermatological studies of paperhangers, an effort was made to identify possible causative agent(s). Several facts which were revealed during the survey suggested that the skin lesions were related to the adhesives; mainly on the basis of their daily use, areas of skin contact and work habit.

Paperhangers were asked to name the wallpaper adhesives they have been using. Many brand names marketed by various companies were mentioned. However, it was soon found that these companies did not manufacture the adhesives themselves, but all were made to order by one company. The specific formulations for each brand product is designated a trade secret. However, upon request by NIOSH, the formulator provided NIOSH some basic information essential to this study.

Basically, wallpaper adhesives are made of water, various types of starch and inert filling material. To this, small amounts of chemicals are added to improve commercial performance of the product. One is a defoamer (or antifoamer) to prevent excess foaming. Another is a group of biocides (bactericides and fungicides) to prevent fouling and mildew. These are listed as items 1 to 4 on Table 5.

These ingredients are batch mixed in a large tank and the pH of the product is adjusted to neutrality. After completion of the mixing, it is poured into various size containers (plastic or metal) and specific labels are applied.

It is reported that vinyl wallpaper has been in market for more than 20 years, and, by necessity, wallpaper adhesives to go with it have been in use for about the same length of time.

Then, it is interesting to note when paperhangers began to experience skin problems. Although the exact time of the onset of their skin problem is hard to determine, plotting their occurrence, as shown in Figure 1, seems to provide some clue. It is noted that development of skin problem among the 22 paperhangers had been sporadic prior to 1972, and that 15 (68%) of this group began to experience skin problems during the past 4 years.

Upon contacting the formulator, it was revealed that the additives listed in Table 5 (Items 1 to 4) were added to the formulation with the following sequence:

| | | |
|----------------|-----|------------------------------------|
| Defoamer NOPCO | (4) | = approximately 5 years ago (1971) |
| Amical-48 | (3) | = approximately 2 years ago (1974) |
| Troysan CMP | (1) | = November 1975 |
| Troysan-174 | (2) | = January 1976 |

The formulator also stated that formaldehyde, which had been used in the past, was discontinued in November 1975 because the company had received complaints of eye and skin irritation. Items (1) and (2) have been used to replace formaldehyde. (Field samples of adhesives analyzed by the NIOSH laboratory all contained formaldehyde but these might well be manufactured prior to November 1975.)

On the basis of this information, manufacturers of these chemicals were contacted and, through their courtesy, pure chemical samples of biocides were obtained, together with their toxicological data. A bulk sample of defoamer was obtained from the formulator.

4. Patch Testing

Solutions for patch testing were prepared by the NIOSH laboratory. Application of these substances on rabbit skin (4 rabbits), both intact and abraded, suggested that up to 50% solution of these substances may be used on human skin. Initially, therefore 5% solutions were prepared and, after testing on NIOSH volunteers, proper concentrations for patch testing were determined (Table 5). At these concentrations, control (previously unexposed) human skin showed no reaction. At the same time, these concentrations were considered potent enough to elicit positive reactions in sensitized individuals. Proper kinds of blank (diluent) solutions and actual adhesive solutions were also prepared.

Altogether, 29 paperhangers who were having present or had past histories of occupation related skin problems were asked to participate in the patch testing in September 1976. It was conducted on the back of examinees using Al-test® patches. Each patch is 25 mm square, consisting of an aluminum foil covered with polyethylene film onto which a disc (10 mm diameter) of filter paper is welded without using glue. All of these components are reported to be free from irritants or sensitizers. The paper disc is saturated with a drop of test solution and applied onto the skin. It is then covered with Dermicel®, a hypo-allergenic cloth adhesive tape for 48 hours. Patched areas were uncovered and read 48 hours and 72 hours after the application.

The skin reaction was read as "positive" when it was not only erythematous (red) but indurated and accompanied by small vesicles. The area of reaction was not confined to the area of disc in the patch but tended to spread beyond the original disc area as the time progressed from 48th to 72nd hour. In contrast, the reaction was termed "irritant, non-allergenic", when the erythema was confined sharply to the disc area without induration or vesicles, and tended to fade away between the two readings.

Altogether, 13 paperhangers were patch tested and 12 (11 with current skin problem and 1 with a recent history of a skin problem) completed the testing. A summary of the results is listed on Table 5. Formaldehyde was not included in the patch testing since Fischer states that many individuals have reactions to formaldehyde that are apparently of no clinical significance.¹

On the basis of the review of occupational and medical histories, skin examination, and patch testing, it was concluded that, of 12 paperhangers who completed all phases of the examination:

- 5 are experiencing chronic irritation (non-allergic) dermatitis from their occupation
- 1 may be having non-occupational allergic dermatitis due to other substance(s)
- 6 are having occupational allergic contact dermatitis due to one or more of additives (Troysan-CMP, Troysan-174, and NOPCO defoamer).

V. DISCUSSION

An intense search of the literature on the subject of paperhangers' dermatitis or dermatitis due to wall paper adhesives has yielded very little information. For example, a classic textbook "Contact Dermatitis" by Fisher¹ does not include such an entity. Perhaps, this is the first such report dealing with this subject.

Paperhangers' dermatitis is probably one of the following conditions:

- (1) Occupational allergic contact dermatitis
- (2) Occupational cumulative insult dermatitis (irritant dermatitis)
- (3) Non-occupational dermatitis incidental to paperhanger

(1) Occupational Allergic Contact Dermatitis

In this study, some paperhangers were found to be allergic to additives 1, 2, or 4. On the basis of this patch testing, appearance and location of the lesions, such cases can be diagnosed as occupational allergic dermatitis.

As seen from Table 5, the patch test concentration was much greater than the use concentration but less than irritant strengths. This is commonly the case with patch test materials.

Additive #1 (Troysan CMP): test concentration of 0.5% is 5 times stronger than the use concentration of 0.1%.

Additive #2 (Troysan-174): test concentration is about 40 times stronger than the use concentration.

Additive #3 (Amical-48): test concentration is about 40 times stronger than the use concentration.

Additive #4 (NOPCO-1619B): test concentration is 500 times stronger than the use concentration.

These solutions were tested on six human control subjects who were not previously exposed to the substances directly or indirectly by handling wallpaper adhesives. No skin irritation was observed on these subjects at 48 and 72 hours. (Additive #1 - Troysan CMP initially produced a skin irritation at 5% in water solution, however, not at 0.5%.) Therefore, the above testing concentrations were considered adequate as the "eliciting" concentration for sensitized individuals. If concentrations are too low, they may result in false negative reactions.

Nonetheless, additive #3 produced transient "irritant" type reactions in two paperhangers and the Additive #4 produced such reaction in one. These irritant reactions were discriminated from the allergic reactions by their clinical appearance and course.

However, there were indeed cases of allergic responses such as those reported in Table 5. Troysan-174 caused 4 such cases, NOPCO-1619B caused two, and Troysan CMP, one.

One observation requiring an explanation is that all but one of 11 people had negative reactions to wallpaper adhesive products (patches #6, 7, 11, and 12). This result may appear contradictory because all of the adhesives are supposed to contain these additives. This may be explained by the local condition of the skin (the back -- not the diseased skin of the hands); and the total amount of chemicals made available to that locality, i.e. the concentration of the sensitizers in the product was inadequate to elicit sensitization reaction on intact skin of the back.

At the use concentration, the amount of additives placed on the disc is very minute. For example, if 100 mg of adhesive is placed, the amount of an additive at 0.1% is 0.1 mg. This small amount could be well below the eliciting threshold concentration resulting in negative response. It must be remembered that paperhangers' hands are exposed to these chemicals repeatedly in a day, and day after day. In addition, the skin's natural barrier has been lessened due to constant wet work and mechanical friction.

As far as this testing was concerned, additive #3 (Amical-48) produced an "irritant" type reaction in two individuals but no allergic reaction was observed. Since it is a yellow granule not easily soluble in water, it is dissolved in acetone for patch testing. Since acetone removes fat from the skin, the combination of Amical-48 at 2.5% in acetone might cause an irritant reaction.

One difficulty with our present results is that the timing of development of skin problems in paperhangers does not correspond to the timing of new additives. This is particularly so in the case of additive #2. As shown in Figure 1, at least 3 paperhangers had begun to have skin problems before January 1976, at which time, it is reported that the company started using it. If this is the case, the dermatitis these men had before 1976 was not due to the additive #2. One possible explanation is that what they had then was irritant dermatitis. After the incorporation of this new additive, some of them might have developed allergy to it. It is well known that irritated skin is much more easily sensitized than normal skin.

(2) Cumulative Insult Dermatitis

This is also called "wear and tear dermatitis" and is defined as "dermatitis developing after repeated insults by weak primary irritants over a long period."¹ An example is housewife's dermatitis due to detergent. The reason why the NIOSH investigators consider that some paperhangers' dermatitis should be classified as such is:

- (a) It is mostly seen in the area of skin contact with the wallpaper adhesives
- (b) Appearance of the lesion is that of chronic irritation
- (c) Improvement on an extended no-work period
- (d) Patch testing reactions are negative or that of irritation, not allergic reaction.

It is possible that they may be allergic to some other substances that have not been revealed to us. However, the possibility of this condition being that of cumulative insult dermatitis is overwhelming.

Again, Fisher states:¹ "Bland substances may become primary irritants when the skin is eczematous or has been subjected to maceration, friction, pressure," This is exactly a situation experienced by paperhangers. Fisher further states: "repeated exposure to irritants may be cumulative, leading to skin "fatigue", characterized by hyper-irritability, or to thickening and hardening." Skin problems presented by many paperhangers showed these types of characteristics.

Why then do not all or most of the paperhangers develop "skin fatigue"? No clear answer is available for this individual difference. There is a great variation in the damaging effects of irritants from one individual to another¹.

Why has there been an increased number of paperhangers having "chronic irritation" for the last 4-5 years? One hypothesis is a mechanism in which the defoamer, a surface tension reducer, interferes with the protective functions of skin fat. Also, it may be possible that various biocides, which are effective because they interfere with metabolism of bacteria or fungi, may be interfering with metabolism of skin cells.

Concentrations of these additives in formulations are not high and they do not produce acute irritation if used sporadically or for only short intervals. However, after many months of repeated exposure, they may be able to produce dermatitis in certain people.

It is believed that no industry-wide systematic studies have been conducted on this subject. By an informal count, it is reported that other local unions of the same trade are not experiencing an outbreak of skin problems. It is not clear what adhesives they are using, but chances are the same kinds are used in other localities. One possible explanation for this is that the members of the Local #490 are full time paperhangers, while in other localities they do both paperhanging and painting, thus reducing the time of exposure to adhesives.

In this study, no systematic effort was made to investigate the responsibility of vinyl wallpaper itself as the cause for paperhangers' dermatitis. Some vinyl plastic materials are known to produce "allergic contact dermatitis". It may be ascribed to traces of the plasticizer (such as tricresylphosphate, dioctyl-phthalate, and ester of adipic acid) or stabilizer (dibutyl tin maleate or dibutyl sebacate).¹

There was a practical difficulty in testing vinyl wall papers, because they come in varieties of colors and textures. If vinyl wall paper was responsible, one would expect that skin lesions would appear predominantly on palmar surface of hands and fingers, as these are the areas which come in contact with wall papers when they are hung. However, this was not necessarily the case. In addition, cured vinyl products rarely result in sensitivity or dermatitis, although uncured plastics commonly do so.

When one paperhanger (who had positive reaction for additives #1, 2, and 4) was tested by his dermatologist, he was positive for one brand of adhesive but negative for a piece of wall paper (both surfaces were tested).

VI. RECOMMENDATIONS

A. Since it has been established that the paperhangers' skin problems are primarily caused by either chronic irritation or allergic sensitization due to wall paper adhesives and their ingredients, it is important that such paperhangers avoid contact with the causative agent(s) by taking measures such as:

1. For some paperhangers having very severe skin problems, it may be advisable for him to change occupation, if possible.
2. Avoid direct contact with adhesives by:
 - (a) not mixing adhesives with bare hands -- use paddles or mechanical agitators
 - (b) wearing protective gloves, if feasible
 - (c) applying protective skin creams (Table 6)
 - (d) wash off adhesives from the skin promptly with lukewarm water
3. Maintain proper skin care at the end of the day.
4. Contractors (employers) should provide disposable protective gloves with cotton lining to paperhangers who require such protection at no cost to them.

B. Manufacturers and distributors of wallpaper adhesives should list the names and concentrations of chemical additives on the label so that paperhangers can identify and avoid the ones they are allergic to. Also, where sensitizing agents have been identified, the manufacturers of wall paper adhesives should attempt to replace such agent(s) with other substitutes or provide more selections for paperhangers.

C. Labels should also have a caution that a repeated direct contact with skin, such as in professional paperhanging, may produce irritant or allergic contact dermatitis in some individuals.

D. In cooperation with contractors, paperhangers should establish a right to select a type of adhesive so that the individual may not have to work with the offending ones.

AUTHORSHIP AND CONTRIBUTORS

| | |
|---------------------------|---|
| Report Prepared by | Shiro Tanaka, M.D. Medical Officer HETAB, DSHEFS |
| Originating Office | Jerome P. Flesch Acting Chief, Hazard Evaluations and Technical Assistance Branch |
| Dermatological Consultant | James Lucas, M.D. Formerly Dermatologist, NIOSH Currently Associate Clinical Professor of Dermatology University of Cincinnati School of Medicine and Deputy Director, Health Effects Research Laboratory, United States Environmental Protection Agency |
| Regional Assistance | Mary Louise Brown, R.N. Regional Coordinator, Region II New York, New York |
| Patch Testing Material | Vernon Perone Industrial Hygienist |
| Analyses of Adhesives | Soo Wang Kim, Chemist Measurement Services Section |

Figure 1: Chronological Relationship between Number of Paperhangers with Skin Problem and Introduction of New Additives to Adhesives

Paperhangers Local Union No. 490, New York, NY
 May and September, 1976

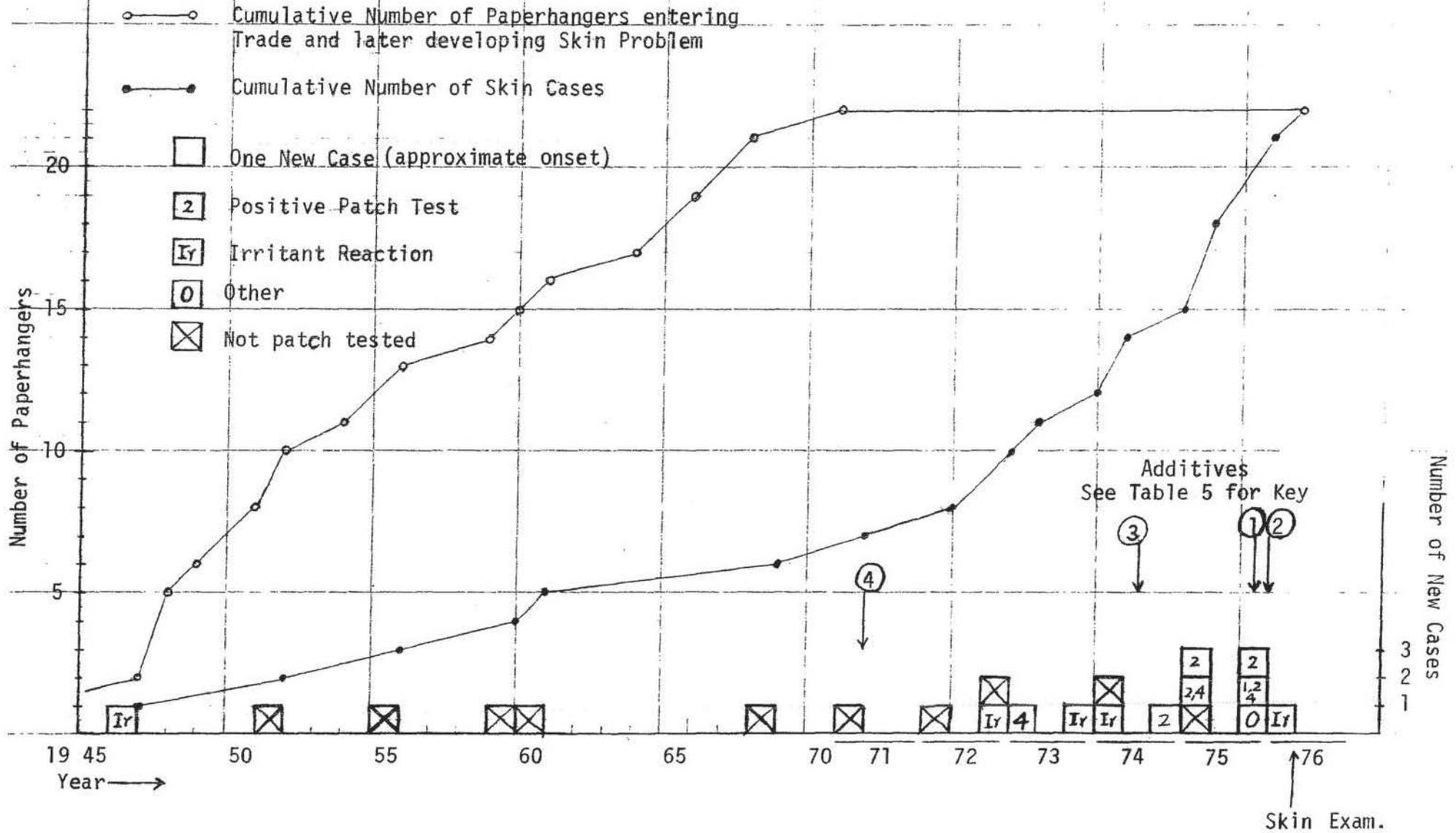


TABLE 1

SUMMARY OF RESPONSE TO QUESTIONNAIRE
AND RESULT OF PATCH TESTING

PAPERHANGERS LOCAL UNION NO. 490
NEW YORK, N.Y.

MAY & SEPTEMBER 1976

211.....Number of questionnaires mailed to active union members

61 (28.9%).....total number of response

- 37*.....response by questionnaire only
- 20*.....response by questionnaire and in person
- 4.....retired from paperhanging (total number of retirees in the union membership is unknown to NIOSH)

*57 (27%).....active paperhangers who responded

- 25** (44%).....currently having a skin problem
 - 20.....could come to skin examination
 - 5.....could not come to skin examination
- 23 (40%).....never had a skin problem
- 9 (16%).....had a skin problem in the past but is now free of skin problem

**25.....currently having a skin problem

- 3.....did not meet the criteria for occupational dermatoses
- 22.....met the criteria for occupational dermatoses and were invited for patch testing
 - 12.....participated in patch testing
 - 6.....allergic reaction (including 1 reaction which is clinically insignificant)
 - 6.....negative reaction
 - 5.....irritant type reaction
 - 1.....possible reaction to other substance

TABLE 2

COMPARISON OF PAPERHANGERS BY GROUPS WITH SKIN
PROBLEMS VS NEVER HAD SKIN PROBLEMSPAPERHANGERS LOCAL UNION NO. 490
NEW YORK, N. Y.

MAY 1976

| | <u>WITH</u> SKIN PROBLEMS | <u>NEVER HAD</u> SKIN PROBLEMS |
|--|---------------------------|--------------------------------|
| Number | 22 | 23 |
| Sex | Male | Male |
| Age | 44.3 \pm 10.3 | 45.5 \pm 11.3 |
| (Range) | (28-63) | (24-65) |
| Years Worked as Paperhanger | 20.7 \pm 8.7 | 17.8 \pm 9.1 |
| (Range) | (5-40) | (0.5-35) |
| Years Worked with Vinyl Wall Paper Adhesives | 15.5 \pm 5.0 | 13.8 \pm 5.9 |
| (Range) | (5-26) | (0.5-23) |
| Years Having Skin Problems | 5.6 \pm 7.2 | Not Applicable |
| (Range) | (0.2-25) | |
| Days Worked During a 30 Day Period Before Skin Exam. | 20.0 \pm 8.9 | 22.3 \pm 7.3 |
| (Range) | (0-30) | (7-30) |

TABLE 3

DESCRIPTION OF SKIN LESIONS REPORTED BY PAPERHANGERS
CURRENTLY EXPERIENCING SKIN PROBLEMS

PAPERHANGERS LOCAL UNION NO. 490
NEW YORK, N.Y.
MAY 1976

(A) Areas Affected

| | |
|--------------------|--------------------------|
| Hand (any part of) | 22 (100%; by definition) |
| Fingers | 19 (86%) |
| Back of hand | 15 (68%) |
| Palm | 13 (59%) |
| Forearm | 8 (36%) |
| Elbow | 4 (18%) |
| Eye Region | 3 (14%) |
| Other | 7 (32%) |

(B) Type of Lesions

| | |
|------------|----------|
| Cracking | 18 (82%) |
| Dryness | 16 (73%) |
| Rash | 9 (41%) |
| Bleeding | 9 (41%) |
| Blisters | 6 (27%) |
| Crusting | 5 (23%) |
| Oozing | 5 (23%) |
| Scaling | 4 (18%) |
| Ulceration | 1 (5%) |

(C) Subjective Symptoms

| | |
|---------|----------|
| Itching | 19 (86%) |
| Burning | 7 (32%) |
| Pain | 6 (27%) |

TABLE 4

COURSE OF SKIN LESIONS REPORTED BY PAPERHANGERS
CURRENTLY EXPERIENCING SKIN PROBLEMS

PAPERHANGERS LOCAL UNION NO. 490
NEW YORK, N.Y.

MAY 1976

| | |
|---|-----------------------------------|
| (A) Years having skin problems | 5.6 \pm 7.2 (Range 0.2 - 25) |
| (B) Temporary Improvement on Extended Vacation (non-work period) | 22 (100%; by definition) |
| (C) Recurrence of Lesions | |
| Immediate - one hour | 6 (27%) |
| 12 hours - 2 days | 4 (18%) |
| Do not know | 12 (55%) |
| (D) Seasonal Change | |
| No seasonal change | 20 (91%) |
| Worse in winter | 2 (9%) |
| (E) History of Allergy | |
| Positive | 6 (27%) |
| Negative | 16 (73%) |
| (F) Sought Medical Help | |
| Yes | 12 (55%) |
| No | 10 (45%) |
| (G) Application of Prescribed Medication or Hand Cream, Lotion, etc. | |
| With some improvement | 10 (45%) |
| With little improvement | 6 (27%) |
| Not attempted | 6 (27%) |

TABLE 5

SUMMARY OF PATCH TESTING RESULTS

PAPERHANGERS LOCAL UNION NO. 490, NEW YORK, N. Y., SEPTEMBER 1976

| <u>Items Used In Patch Testing</u> | <u>POSITIVE</u> | <u>IRRITATION REACTION</u> | <u>NEGATIVE</u> | <u>TOTAL</u> |
|---|-----------------|----------------------------|-----------------|--------------|
| 1. Chloromethoxy acetoxy mercury propane (Troysan CMP) Test concentration 0.5% in water Reported Concentration in wallpaper adhesive 0.1% | 1 | | 11 | 12 |
| 2. Hydroxymethyl amino ethanol (Troysan-174) Test concentration 5.0% in water Reported concentration in wallpaper adhesive 0.1% | 4 | | 8 | 12 |
| 3. Diiodomethyl paratolyl sulfone (Amical-48) Test concentration 2.5% in acetone Reported concentration in wallpaper adhesive 0.06% | | 2 | 10 | 12 |
| 4. NOPCO - 1619B (an antifoaming agent) Test concentration 5.0% in water Reported concentration in wallpaper adhesive 0.01% | 2 | 1 | 9 | 12 |
| 5. Vinyl acetate 10% in water | | | 12 | 12 |
| 6. Wallpaper adhesive (103-5-1, X-02112 RS) 10% in water | | | 12 | 12 |
| 7. Wallpaper adhesive, (as above) 100% | | | 12 | 12 |
| 8. Acetone | | | 12 | 12 |
| 9. Distilled water | | | 12 | 12 |
| 10. Troysan CMP 0.1% in water | | | 12 | 12 |
| 11. Wallpaper adhesive (W-G) | 1 | | 10 | 11 |
| 12. Wallpaper adhesive (Vcr) | 1 | | 10 | 11 |

TABLE 6

PAPERHANGERS LOCAL UNION NO. 490
NEW YORK, N.Y.

MAY AND SEPTEMBER 1976

Some Examples of Protective Skin Creams

(This listing is only for the convenience of those involved.
It does not imply endorsement of such products by NIOSH.)

Kerodex #51
Ayerst Labs
685 3rd Avenue
New York, N.Y. 10017

PLY #9
Milburn Co.
3246 E. Woodbudge
Detroit, Michigan 45207

West Protective Cream #211
West Chemical Products Company
42 16 West Street
Long Island City
New York