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United States Public Health Service

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Occupational Dermatitis and Dermatitis From Cosmetics and Fabrics—Medico-Legal Aspects

*Louis Schwartz, M.D.**

DISEASES OF THE SKIN are the most frequent of all occupational diseases. They constitute about two-thirds of all occupational diseases reported to compensation boards. This follows logically from the fact that the skin is the largest and most external organ of the body and hence has the most contact with environmental irritant and toxic substances. According to government statistics, it has been estimated that the monetary loss per year from occupational skin diseases is more than 100 million dollars.

Members of the legal profession having clients, either claimants or defendants, in cases involving compensation should have some basic knowledge of occupational dermatitis.

Definition

A dermatitis can be said to be occupational if it is caused by anything in the occupational environment. It is not necessarily limited to a dermatitis peculiar to the particular occupation. For instance, an occupational dermatitis peculiar to workers with cutting oils is acne and boils, but a worker with cutting oils may develop an occupational dermatitis from antirust compounds used on metal parts. He may even get a dermatitis from substances used to prevent dermatitis, such as skin cleansing compounds, rubber gloves, etc. Workers around machine parts may develop dermatitis not only from the machine parts but also from substances contained in or used on those machine parts. For instance, workers on diesel locomotives have developed allergic dermatitis from the coolant used in the diesel engines (Nalco) or from the strong alkaline washing solutions used to clean disassembled parts.

A non-occupational skin disease which is aggravated by contact with an occupationally encountered substance is also considered an occupational dermatitis.

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Causes

The causes of occupational dermatitis may be classified as predisposing and actual causes.

The defense mechanism of the skin against external irritants consists of the outermost layers of cells and the secretions of the glands of the skin.

The vulnerable portions of the skin are the openings of the ducts and hair follicles and any thinning or breaks in the outermost layer which will permit easy access of external irritants to the deeper layers of the skin.

Predisposing Causes

The following factors may predispose the skin to occupational or other forms of contact dermatitis:

Race. As a rule, blond, thin, dry skinned races are more susceptible to external irritants than are races that have thick and oily skins.

Age. As we approach middle or old age the skin tends to become thinner and drier; therefore, external irritants are more apt to penetrate the skin of old people than of young people.

Sex. While as a rule the skin of women is drier than that of men, the fact that women tend to keep their skin cleaner than do men counteracts this fact and the percentage of claims for occupational diseases among women is no higher than it is among men.

Season of the Year. Because less clothing is worn in summer and because perspiration tends to macerate the skin, occupational and other forms of dermatitis are apt to be more prevalent in the summer than in winter.

Other Skin Diseases. The presence of non-occupational diseases of the skin tends to predispose to occupational dermatitis because the defense mechanism of the skin is impaired and scratching also tends to rub into the skin any environmental irritant.

Cleanliness. The most important predisposing cause of occupational dermatitis is the lack of environmental and personal cleanliness. The lack of proper skin washing facilities, the lack of proper ventilation and exhausts to remove occupational irritants, and the failure of management to provide protective ointments and clean protective clothing, may permit irritants to remain on the skin for long periods and thus enhance their skin irritant tendencies.

The right of a worker to compensation for an occupational dermatitis is not deemed to be affected by the fact that his type of skin or his habits predispose him to the disease.

Actual Causes

The actual causes of occupational dermatitis can be classified into two great divisions, based upon their reaction upon the skin, namely: (1) primary irritants and (2) sensitizers.

A primary skin irritant is an agent which will cause dermatitis by a direct action on the normal skin at the site of contact if it is allowed to act in sufficient intensity or quantity for a sufficient length of time.

A skin sensitizer is an agent which does not necessarily cause demonstrable skin changes on first contact but effects such specific changes in the skin that after 5 to 7 days or more, further contact on the same or other parts of the body will cause dermatitis.

A primary irritant has a chemical or physical action on that portion of the skin which it touches. A primary irritant may also be a sensitizer. That is, exposure to it may so condition the skin that further contact with even such dilutions or for such a short time as would not have caused any trouble, may now result in dermatitis.

Primary skin irritants and sensitizers may each be chemically classified as organic and inorganic, and these groups can again be subdivided into other smaller groups based on chemical composition and occurrence in nature. For instance, such classifications as acids, alkalis, solvents, petroleum products, salts, dyes, plants, parasites, insects, fungi, etc. (See *OCCUPATIONAL DISEASES OF THE SKIN* by Schwartz, Tulipan and Birmingham, Lea & Febiger, Philadelphia).

Statistics gathered from the compensation boards of the various states show that primary skin irritants are the causes of about 80 per cent of all occupational dermatitis and hypersensitivity accounts for the remainder.

Occupational dermatoses are differently defined but covered by the compensation laws of all our states as well as by the federal government. One such definition is, "An occupational dermatitis is one which results from the conditions which employes encounter in their occupational environment and which entail a hazard in excess of the hazards attending people otherwise employed."

Most cases of occupational dermatitis do not come before workman's compensation boards. Only those cases which the employer or insurance carrier think are not of occupational origin and which the worker thinks are of occupational origin come for decision before workman's compensation boards. For every such case there are many hundreds who receive full pay and free medical treatment either at the dispensaries of the plant, or from private physicians, or hospital treatment at the expense of the management or insurance company.

Diagnosis of Occupational Dermatitis

Workers, in addition to occupational dermatitis, are subject to the same skin diseases as is the general population. It is therefore important to determine the cause of the dermatitis in the worker, not only because it has a direct bearing on the treatment of the case and on the prevention of recurrences, but also because of the compensation and the medical fees involved.

It is the tendency of the general practicing physician to lean toward a diagnosis of industrial dermatitis, based mainly on the patient's say-so. He has no time or opportunity to actually visit the plant and inspect the patient's occupational environment and evaluate the skin hazards. Therefore, industrial dermatologists have established criteria on which the diagnosis of occupational dermatitis is to be based. These criteria are:

1. *History.* This must show that such a dermatitis was not present before the patient entered on his present occupation. It must show that the dermatitis developed during a period of occupational exposure or after a lapse of a reasonable incubation period following the cessation of exposure. If it is known that other workers similarly employed are similarly affected, then the diagnosis of occupational dermatitis is more likely to be correct than if this patient is the only one of a group who is affected.

If the patient has previously had similar attacks when working with the same chemicals, the chances that he has an occupational dermatitis are increased. If the history shows that dermatitis occurs whenever the worker is at work, improves or disappears when he is away from work for a few days, and recurs soon after he returns to work, then there is established a definite cause and effect relation between the occupation and the dermatitis.

2. *Site of the Eruption.* The site of the eruption is important, because occupational dermatitis begins on the parts most exposed

to the irritant: the fingers, hands, and forearms if the substance is handled; the face and neck where the industrial operation gives rise to irritant dust, vapors and fumes. The covered parts of the body may be affected when the irritant penetrates the clothing. Especially is this so if work clothes and underclothes are not changed daily and if adequate washing facilities are not available or not used. Portions of the body subject to friction are often sites of occupational dermatitis: the wrist, the belt line, the ankle at the shoe top, the neck at the collar line—all are sites where irritants may be rubbed into the skin. Sometimes an irritant not strong enough to cause dermatitis on the fingers may be carried by the hands to the tender skin under the eyes and cause dermatitis there. Sometimes an occupational dermatitis may cover the entire front of the body. Especially does this occur in workers who have a high degree of sensitivity and who are exposed to irritant penetrating dusts, fumes, or vapors, or who work for long periods without changing work clothes. Only rarely does occupational dermatitis occur on portions of the back which are difficult to reach with the hands.

3. *Morphe or Appearance of Lesions.* This is not characteristic except in a few classes of occupational irritants. Most of them resemble eczema. Paronychia (inflammation around the nails) and onycholysis (erosion or loosening of the nail) are common occupational lesions among fruit and vegetable canners, dishwashers, soda fountain attendants, scrub-women, and housewives. Acne-like lesions, folliculitis and boils on the arms and legs are characteristic occupational lesions among workers exposed to cutting oils, crude petroleum, heavy coal tar distillates, and certain viscous and wax-like chlorinated hydrocarbons. Hydroscopic chemicals, such as sugar, salt, lime and the volatile solvents, will in time cause even the palms to become defatted and fissured.

4. *Patch Tests.* These are performed by placing onto the unaffected skin small amounts of the substances suspected of causing the dermatitis. The patch test is based on the theory that if a dermatitis is caused by hypersensitivity to a certain substance, such substance when applied to an area of unaffected skin of the susceptible individual and left on for a period of time will cause an inflammation at the spot where it touches the skin. It is important that no primary irritants, such as strong acids or alkalis, be used in the patch test, as they will burn any skin. It is also important to know what concentrations of certain chemicals can

come in contact with the normal skin for a stated period of time without causing an inflammation or reaction.

The portion of the body on which a patch test is to be performed is also of importance because it has been found that the different portions may vary in sensitivity. For instance, the tough horny skin on the palm is less susceptible to irritants than the more tender skin on the inner surface of the forearm. For this reason, patch tests performed on uninflamed skin adjacent to the eruption are more likely to give reactions of diagnostic significance than when performed on more distant areas.

If the worker is handling known irritants and his fellow-workers are also affected, the cause is obvious and the patch test is unnecessary; but if he is the only one of the group who is affected, then he should be tested with the materials with which he comes in contact in the course of his occupation (exclusive of primary skin irritants). If he is patch tested with only one substance, a control patch should also be used on the other side of the body. If the subject is tested with more than one substance, any negative reaction from one of these substances serves as a control. It is also desirable to patch test as a control, one of his fellow-workers who has no dermatitis. The correct application to the skin of various concentrations of substances as patch tests is important in evaluating the results. (See *OCCUPATIONAL DISEASES OF THE SKIN* by Schwartz, Tulipan and Birmingham, 3rd edition, pp. 58-85, Lea & Febiger, Philadelphia.)

The results of patch tests must be correlated with the worker's particular occupation, the history of the dermatitis, the sites, morphology of the lesions and the course of the disease, in order to arrive at a correct etiologic diagnosis. Patch tests are only a link in the chain of evidence on which a diagnosis of industrial dermatitis is made. A positive reaction shows only that the portion of the skin on which the patch was applied was at that time sensitive to the particular substance. In order to state that this substance was the cause of the occupational dermatitis, it must be shown that the patient was exposed to the substance in the course of his work and to presuppose that the patient's skin was sensitive at the time of industrial exposure.

When negative results are obtained from patch tests it must not hastily be concluded that the dermatitis is not of industrial origin because:

1. The skin area on which the patch test was placed may not have been as hypersensitive as the skin area affected by the eruption.

2. If the eruption had disappeared by the time the patch test was applied, the worker may have lost the sensitivity which he had at the time that he developed the eruption.

3. A negative reaction may be due to the fact that the patch test does not reproduce actual working conditions, such as friction, maceration, heat, cold, etc., which may be additional factors aiding the irritating effect of the substance.

4. There may be a negative reaction because the concentration and amount of the substance applied as a patch test was not as great as in the actual industrial exposure.

5. Finally, the patch test may be negative because the actual industrial irritant may not have been discovered and applied as a patch test.

When negative reactions are obtained from properly performed patch tests with substances encountered in the workroom, an effort should be made to perform patch tests with materials in the patient's home, which may be the cause of his dermatitis. Certain house plants, new furniture, insecticides used in the home, cosmetics, wearing apparel, and household washing agents are examples of substances which may cause contact dermatitis.

The ordinary technique of performing patch tests is as follows: A sample of the material to be tested is placed on a suitable, non-inflamed skin site, preferably a place where the skin is thin as, for instance, the forearm, the upper arm, the bend of the elbow, the skin on the thighs, the skin behind the ears, or on normal skin adjacent to the eruption. If the material to be tested is a solid, it is best to powder it, place it on a piece of gauze and apply it to the skin, and cover the gauze with adhesive plaster. A solid may also be dissolved in a suitable solvent and a piece of gauze dipped into the solution, lifted out and allowed to dry so that the finely precipitated substance is impregnated into the gauze. This can then be placed onto the skin. In the case of liquids or solutions (not primary irritants) to be tested, the gauze is moistened with the liquid and applied to the skin. Sometimes it is possible to paint a solution of the suspected substance directly on to the skin site and allow the solvent to evaporate, leaving the substance itself adhering to the skin. This area can then be covered with adhesive, or if the substance does not have a tendency to come off, the patch can be left open. Patch tests should remain on the skin for at least 24 hours. Patch tests must not be performed with primary irritants unless they are so diluted that they

are no longer primary irritants. Diagnostic patch tests may be removed after 24 hours and if the patient is sensitive there will be signs of inflammation of varying degrees at the patch site.

At the time the patches are removed there may be no inflammation present but sometime later—a few hours to a few days—inflammation may develop at the site of the patch. These are known as delayed reactions and also denote hypersensitivity.

Patch tests properly performed and evaluated are of help in the diagnosis of contact dermatitis, but if improperly performed and evaluated they may lead to confusing and unjustified conclusions.

The Course of the Disease

Occupational dermatitis is in most instances a contact dermatitis and tends to get well when contact with the causative agent ceases. Acute occupational dermatitis ameliorates when the worker is away from work for a few days, such as for week ends. It may entirely disappear if the worker stays away from work for a week or longer. Even the chronic lichenified forms of occupational dermatitis will improve under the above conditions. If a contact dermatitis does not get well or at least show marked improvement after the worker is away from the shop for a reasonable time, a non-occupational etiology must be suspected. If the worker stays away from work for a month or longer and during this time there are remissions and exacerbations of the dermatitis, it is reasonable to suspect that his occupation is not the cause of his dermatitis, or that if it is, then the dermatitis is being kept active by mistreatment or the worker is meeting with non-occupational skin irritants.

Differential Diagnosis

The diagnosis of occupational dermatitis can usually be made by carefully considering and evaluating the criteria discussed above. However, occasional instances arise where the differential diagnosis from non-occupational skin diseases must be considered.

Contact dermatitis from substances encountered outside the occupational environment is perhaps one of the most common confusing conditions. The symptoms are similar to those of occupational dermatitis and the differential diagnosis is made by carefully evaluating the above stated criteria.

Some of the substances met with outside of the occupational environment which may cause dermatitis are soaps used in the home from which housewives' eczema occasionally occurs, dermatitis from cosmetics, dermatitis from jewelry and wearing apparel, dermatitis from paints and paint thinners used in the home, and dermatitis from insecticides or fungicides used in the home or garden.

Another disease offering considerable difficulty in differential diagnosis from occupational dermatitis is atopic or neurodermatitis. Atopic dermatitis is of unknown etiology but psychic disturbances are active causative factors. I will not go into all the points of differential diagnosis but will cite a few. In atopic dermatitis there is often an allergic family history and a history of eczema when the patient was a child. The patient may be allergic to many substances encountered outside the occupational environment, such as foods, drugs, plants, etc. He may also have respiratory allergy (hay fever, asthma). Remissions and flare-ups of the dermatitis are unpredictable in atopic dermatitis and bear no relation to the occupational environment. Exacerbations are precipitated by emotional tension and remissions occur when tension is relieved. Patch tests with occupationally encountered allergens may be negative or positive, but so may they be with many substances encountered outside the occupational environment.

The theory held by some that because a person becomes sensitized to an occupational allergen, the "base of his sensitivity becomes broadened" and he becomes sensitive to chemically unrelated allergens, is contrary to the theory that sensitivities are highly specific, and is also contrary to the experiences with occupational dermatitis. Many instances to the contrary are known in industry as, for instance, workers who become sensitized to an industrial allergen will often become hyposensitive to it after continued exposure. This phenomenon has become known as "hardening." As a matter of fact, one effective method in the treatment of occupational dermatitis is to transfer the affected worker to another job where he does not meet the same allergen that is causing his dermatitis.

Compensation for an atopic dermatitis may be logical on the basis of "aggravation by the occupation of a pre-existing disease," provided the patient shows a positive skin test to the occupational allergen.

Fungus infections and their allergic reactions may also offer problems in differential diagnosis. Fungus infections affect a large percentage of the general population. Athlete's foot, *tinea cruris*, *tinea versicolor*, are common skin diseases. Allergic reactions in the form of skin eruptions on distant parts of the body may result from fungus infections, and these allergic reactions or "phytids" when on exposed parts of the body may be confused with industrial dermatitis. The differential diagnosis of phytids from industrial dermatitis is narrowed down to vesicular and eczematoid eruptions on the hands and arms. Phytids of the hands and arms are comparatively infrequent in the general population as well as in industry. For this reason, a vesicular, eczematoid eruption of the hands in an industrial worker is in most instances a contact dermatitis. In making a diagnosis of a phytid the following diagnostic points should be present:

1. There must be an active fungus infection on some part of the body.
2. The trichophytin test must be positive.
3. The eruption on the hands usually involves the palms and is vesicular in character and does not improve after the worker is removed from contact with the suspected industrial irritant.
4. Phytids are more frequently seen on the palms and on the sides of the fingers, whereas contact dermatitis is most often seen on the back of the hands and forearms.
5. Phytids are usually symmetrical, whereas contact dermatitis may be unilateral or especially marked on the parts that contact the irritant.
6. Patch tests with suspected industrially encountered allergens are negative when the dermatitis is a phytid. It is possible, however, to have a phytid aggravated by contact with an industrial irritant.

There are other skin diseases which may be confused with occupational dermatitis. (See *OCCUPATIONAL DISEASES OF THE SKIN* by Schwartz, Tulipan and Birmingham, Lea & Febiger, pp. 85-102.)

Industrial physicians and dermatologists making a diagnosis of occupational dermatitis should at least fill out the following questionnaire in each instance:

SKIN CLINIC

Date -----

Name of Employer -----

Manufacturer of -----

Name of Employee ----- Age --- Race-----

Type of Skin: Dry, moist, thick, thin, parchment-like, dark, light,
(Check) freckled, chapped.

Previous Skin Diseases -----

Briefly describe work -----

Present work began ----- Present disease began -----

Chemicals or substances contacted -----

Describe lesions -----

Patch tests performed:

Substances	Concentrations	Time	Reactions
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----

If no patch tests performed, state reason why -----

Dermatitis caused by -----

Diagnosis based on -----

Treatment given -----

Preventative advised -----

Advised cease work ----- How long? -----

Remarks -----

The answers to such a questionnaire will better enable the compensation board to judge the criteria on which the diagnosis was made.

Prevention of Occupational Dermatitis

The measures for the prevention of occupational dermatitis that are provided by the management for the use of the workers are often factors in deciding compensation for a doubtful case of occupational dermatitis. In disputed cases of occupational dermatitis, where there is medical evidence pro and con as to the diagnosis, the compensation board or the jury (railroad workers, vessels and other interstate carriers) is sometimes swayed by

the fact that adequate dermatitis preventive measures are or are not furnished to the workers. The following are the measures recommended for the prevention of occupational dermatitis:

1. Personal and environmental cleanliness is the most important preventive measure. Clean workrooms, clean machinery and an adequate number of strategically placed washbasins are essential, supplied with hot and cold water, with a good industrial soap and with paper towels, as well as an adequate number of shower baths so that workers can take a shower within a reasonable length of time after work.

2. Provide proper protective clothing such as gloves, sleeves, aprons, coveralls, etc., and keeping them clean and in good repair.

3. Where suitable, provide protective ointments.

4. Good general ventilation of the workrooms.

5. Properly placed exhaust hoods to draw away from the workers irritant fumes, dust and mists.

6. Educating the workers by means of safety talks, pamphlets and posters as to the necessity for using the preventive measures supplied by the management.

Dermatitis From Wearing Apparel and Cosmetics

There is scarcely a substance to which some person is not allergic, and allergenic substances are the principal causes of dermatitis from wearing apparel and cosmetics. While many cases of dermatitis caused by wearing apparel, cosmetics and jewelry are seen by dermatologists, the percentage of the population affected is almost negligible. It has been estimated that the incidence of dermatitis from these materials is less than one case per 130,000 of the population. This is a far lower incidence than allergy to foods.

In dermatitis from wearing apparel it is rare that the allergenic substance is the actual raw fiber from which the garment is made. It is usually from chemicals with which the fiber is processed, such as the yarn oil, the dye, or the finish, the latter being the cause in most of the cases.

Cosmetics are universally used, even by men, and someone may be allergic to almost any of them. However, hair dyes, hair wave preparations, nail preparations, lip rouge, medicated soaps, skin creams and perfumes (listed in the order of frequency)

have been the principal allergens reported as having caused dermatitis.

Except for an occasional outbreak from new and untested products, the large majority of claims for dermatitis apparel and cosmetics are due to the constitutional idiosyncrasy (allergy) of the patient rather than the high allergenicity of the product.

It is not difficult to diagnose allergic dermatitis due to wearing apparel or cosmetics. The disease begins at the site of contact, usually 5 days or more after the first contact. This is the period of incubation for the establishment of sensitivity. The eruption may occur sooner if the patient has had previous contact with a garment, cosmetic or piece of jewelry containing the same sensitizing chemical. In the case of outbreaks of dermatitis the article of wearing apparel or the cosmetic is a primary skin irritant or has high sensitizing properties.

The disease is usually confined to the sites touched by the irritant. Only in rare cases is there spreading to parts where the irritant has not touched the skin. The eruption tends to disappear or improve when contact with the substance ceases and becomes worse or reappears when the garment, cosmetic or piece of jewelry is again used.

Methods have been devised to find the actual irritant chemical in the garment, cosmetic or piece of jewelry that caused the dermatitis. Patch testing with the individual constituents of the suspected substance will usually pinpoint the actual irritant. The following questions should be answered before a diagnosis of dermatitis from a garment, cosmetic or piece of jewelry is made:

1. When did patient buy the garment, cosmetic or piece of jewelry?
2. From what firm?
3. Date when it was first worn or used.
4. Date when eruption was first noticed.
5. What part of body was first affected?
6. Did the eruption spread to other parts of the body?
7. Describe the type and extent of the eruption.
8. What previous skin diseases did the patient have?
9. Has the patient an allergic family history?
10. Has the patient a history of skin or mucous membrane allergy?
11. What drugs, if any, has the patient used? (Laxatives, headache remedies, sedatives, sleeping pills, antibiotics.)

12. Were any such drugs taken immediately before present eruption?

13. Did patient visit the country or work in a garden before the eruption?

14. Was poison ivy or other plant contacted before eruption?

15. Is the eruption still present?

16. When was use of garment or cosmetic discontinued?

17. How long after this did the eruption last?

18. Were patch tests performed?

19. If so, with what substances. Describe tests in detail and give results.

20. If no patch tests were done, give reasons for not doing them.

21. Has the actual chemical causing the dermatitis been found?

22. Describe how this was accomplished.

23. Summarize the facts on which you base your diagnosis.

24. What treatment was given?

25. Give prognosis.

If the patient is to make a claim for damages in which the attending physician is to testify, the physician should make himself familiar with all the medical literature pertaining to such cases. The counsel and the physician before appearing in court should confer and agree on the questions which, on direct examination, will best bring out the facts to prove the claims.

The following are some points the plaintiff should try to show:

1. He was not the only one similarly affected by wearing or using the alleged offending substance. That there were many other users similarly affected.

2. That the store from which the article was bought or the manufacturer of the article did not properly ascertain the skin irritant properties of the product before offering it for sale.

3. That the article causing the dermatitis contained chemicals which are notorious skin sensitizers or irritants.

4. That the article causing the dermatitis contained new chemicals or chemicals not previously used in making such articles.

5. That the particular article was not properly processed according to the accepted custom of the trade, i.e., finish not properly applied, the dye bled, etc.

6. That before the article was placed on sale properly performed skin tests by a competent dermatologist on 200 or more subjects were either not performed, improperly performed, or did not show that the article was safe for use.

7. Patch tests properly performed by a dermatologist on the patient and on control subjects showed that the article is a primary skin irritant or a strong sensitizer and was the cause of the dermatitis.

8. That the patient was not sensitive before the article was used.

9. That using the article was the cause of the sensitization.

10. That upon ceasing to wear the article the eruption tended to get better and that again wearing the article caused the eruption to get worse.

11. That the plaintiff was not allergic to or did not contact any other substance which may have caused the dermatitis.

The following are some points the defendant should try to show:

1. That although there are many thousands of users of the substance, the plaintiff was the only one affected or the incidence of reported dermatitis from it was less than one in 10,000 users.

2. That the article contained no new chemicals or chemicals not previously pronounced safe for use in such article.

3. That the article contained no known primary irritants or strong sensitizers.

4. That the article was made in the usual manner in which such articles are made and approved by the trade.

5. That the new chemicals used, if any, were properly tested by experienced dermatologists on 200 or more subjects and pronounced to be safe for skin contact.

6. That the finished article as used by the plaintiff was properly tested by experienced dermatologists on at least 200 subjects and found to be safe for skin contact.

7. That the article used by the plaintiff did not cause dermatitis when it was new.

8. That it was only after the article had been washed, dry-cleaned, otherwise processed or contaminated by the claimant that the dermatitis appeared.

9. That the dermatitis of the plaintiff did not have a cause and effect relation with the use of the substance, i.e., that it did not begin where the substance touched the skin; that it was not confined to parts of the body touched by the substance; that it appeared, disappeared, improved, got worse, regardless of whether the substance was or was not used.

10. That patch tests with the substance on the patient were negative or if positive were not properly performed with the article as purchased nor properly evaluated, i.e., patch tests were made with extracts of the substance; patch tests were permitted to remain on the skin too long; conditions of the patch tests were more severe than actual use, i.e., hair dyes were sealed onto the skin with impermeable covered patches, whereas hair dyes in actual use remain on hair and skin for half an hour or less and then are shampooed off.

11. That no control patches on the plaintiff were used (to show that the plaintiff is not hypersensitive to other substances) when the patch tests were performed. Nor were control subjects patch tested with the substance to show that it is strong sensitizer affecting a considerable percentage of users.

12. That the dermatitis was not a contact dermatitis but is some other skin disease (psoriasis, lichen planus, etc.)

13. That the plaintiff is allergic to other substances (an atopic individual) which may have caused the dermatitis.

The direct examination of the medical expert by the lawyer who has asked him to testify usually brings out the facts in favor of that particular side of the case. It is the cross-examination by the opposing lawyer which may win or lose the case.

Therefore, the pre-trial conference between the medical expert and the lawyer should anticipate questions to be asked on cross-examination.

Sometimes on cross-examination questions are asked which do not belong to the field of dermatology. Unless the doctor is absolutely certain of the correct answer, he should state that the subject is not in his field, rather than venture an answer that may be wrong. Dermatologists on the witness stand are often asked questions pertaining to chemistry or physics. It is safer to

answer such question by saying, "I don't know" or "This is outside of my profession" than to try to answer them.

The medical expert may have difficulty in answering hypothetical questions which presuppose conditions contrary to fact. For instance, "Doctor, if the composition of this cosmetic had contained a higher percentage of chemical #1 and a lower percentage of chemical #2, what would have been the result as far as injury to the skin is concerned?" The answer to such a question involves not only the individual skin irritant properties of chemicals #1 and #2, but also the irritant properties of whatever chemical may be formed by the combination of these two chemicals. The medical expert may well answer, "I am not a chemist and am not certain what the irritant properties, if any, of such a combination would be. Neither have I tried the effect of such a combination on the skin."

Sometimes it is of value to have the medical expert listen to the testimony by the opposing medical witness (if the court permits). He may then suggest to the lawyer questions on cross-examination of the opposing medical witness, which may discredit or be damaging to his testimony.

Lawyers trying suits for contact dermatitis should make themselves familiar with the basic concepts of the disease. They should also consult with dermatologists expert in the subject and employ them for expert testimony.