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CONTACT DERMATITIS DUE TO HIGH SPEED DIESEL OIL (H.S.D.) (A Study  
at Western Railway Diesel Shed, Ratlam)

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Contact Dermatitis constitutes an important occupational hazard. Ten percent of the skin diseases in the population are of Industrial Origin. The purpose of the present study which was undertaken at Western Railway, Diesel Shed, Ratlam was (1) to ascertain the incidence and cause of dermatitis among the workers coming in close contact with H.S.D. for cleansing and servicing the locomotive parts, (2) to adopt suitable preventive measures.

#### MATERIAL AND METHODS

A total number of seventy workers exposed to H.S.D. oil were examined clinically for evidence of any skin disease. Out of these 12 workers (17.1%) showed signs of dermatitis and they were all given a questionnaire to be filled in (Please see Annexure 'A'). Besides a patch test was done on each one of them using (a) clean diesel oil, (b) dirty diesel oil, (c) saline as a control and (d) with barrier cream and oil. Reading of the patch test was done after 48 hours. Interpretation of the test was made as follows :

- 1) Erythema + (Weakly positive)
- 2) Erythema with vesicles ++ (Moderately positive)
- 3) Erythema with Oedema & Vesicles +++ (Strongly positive)
- 4) No reaction - (Negative).

#### RESULTS

Out of seventy workers exposed to H.S.D. Oil, twelve (17.1%) suffered from contact dermatitis. During the study, there was one drop out. They were all male workers with age range of 20-35 years. The duration of exposure to H.S.D oil of these workers was from three months to five years.

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Table I shows age incidence and duration of exposure to H.S.D. oil.

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TABLE - I

Age incidence and duration of exposure to H.S.D. oil

Age Incidence		Duration of exposure	
Age in years.	No. of cases.	Duration of exposure	No. of cases
20 - 25	2(18.25%)	Upto 1 year	3(27.27%)
25 - 30	4(36.50%)	1 to 2 years	4(36.36%)
30 - 35	5(45.25%)	2 to 3 years	Nil
		3 to 4 years	2(18.18%)
		4 to 5 years	1(9.09%)
		above 5 years	1(9.09%)
Total	11(100%)	Total	11(100%)

Contact dermatitis developed in majority of workers (9 cases out of 11) in less than a year after their joining the work. Table II shows the clinical patterns of contact dermatitis.

TABLE II

No.	Clinical Pattern	No. of Cases.	Percentage
1.	Oozing Eczematous Dermatitis (hands)	4	36.36%
2.	Nummular Eczema on hands	2	18.18%
3.	Oil Acne on hands & thighs	2	18.18%
4.	Oil Acne on hands upto elbow	2	18.18%
5.	Oozing Eczematous Dermatitis on thighs	1	9.09%
Total		11	Total 100%

It is obvious from Table II that only those parts of the body (viz., lower and upper limbs) which come in contact with H.S.D. oil showed skin lesions.

It was observed that in seven out of eleven workers, the skin lesions improved when they abstained from the work.

It is seen from the questionnaire that no protective barrier cream was used by the workers and for cleaning the hands after work a liquid soap (Suberol) was used. This, however did not prevent contact dermatitis. Three persons gave history allergy in the family. None of the affected workers was examined periodically. Even pre-employment patch testing was not carried out.

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The result of patch test down on ten workers out of twelve suffering from contact dermatitis is shown in Table III (one person removed the patch before it could be read and one person had dropped out of the study as mentioned earlier).

TABLE III

	Strongly positive	Moderately positive	Weakly Positive	Negative	Total
H.S.D.	1	3	5	1	10
Dirty H.S.D.	1	1	7	1	10
Control with normal saline	0	0	1	9	10
*Barrier cream & H.S.D.	0	0	0	10	10

\*BARRIER CREAM USED IN STUDY WAS "KERODEX" MANUFACTURED BY PATEL BECS, BOMBAY

As seen from TABLE III, patch test was negative in all the persons who applied barrier cream before application of H.S.D. oil. There was no significant difference between the patch test reading of clean H.S.D. and dirty H.S.D.

DISCUSSION

Contact dermatitis is a cell mediated immune reaction which is dependent on the presence of immunologically competent lymphocytes capable of reacting with a specific peptone protein complex. Individual predisposition plays an important role in the development of contact dermatitis. Contact dermatitis among the workers was of the nature of allergic contact dermatitis. There is no history of Photo - sensitisation.

- Recommendations: (a) Pre-employment medical examination with reference to -
- (i) History of allergy in the patient or his family.
  - (ii) Patch test with H.S.D. oil.

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Cases with positive history of allergy and/or positive patch test should not be given such jobs where they come in direct contact with H.S.D. They must be put in alternative office jobs.

b) Hygienic Measures

- i) Cleaning facilities: There should be proper facilities for cleaning the hands and feet after work. Cleanser should dissolve the H.S.D. oil stains thoroughly well.
- ii) A rubber over-all should be given to every worker to be put on his body so that it protects the clothes from being soiled. This will prevent the direct contact of body with H.S.D.

c) Protective Measures:

A barrier cream (Kerodex) should be provided with an applicator at the entrance and use of it be made compulsory before the worker starts working. He should use it as many times as he breaks the day (before starting the work and not after it). Even if the worker feels sticky after applying it, he can wash the hands with plain water after applying the cream. Plain water will not wash out the cream and also will prevent the machine parts in coming in contact with the cream.

This should be made absolutely compulsory.

d) Periodical skin examination of the employees:

Every six months all the workers should be examined to find out those cases who hide their skin disease for fear of losing the job. Those affected should be treated and given alternative job if necessary.

e) Health Education :

This is the most important part of the whole campaign. If the employees will understand that such precautions are in their own interest, they will be more likely to co-operate. Education regarding the personal cleanliness and methods of using barrier cream should be imparted to all the workers.

f) Working Environment:

The climate of the work place should not be hot and humid, since the sweat can enhance the development of contact dermatitis.

S U M M A R Y

Twelve workers of Ratlam Diesel Shed suffering from contact dermatitis due to H.S.D. Oil were examined. All were patch tested to ascertain the cause. The offending agent was H.S.D. Oil. Prophylactic measures are recommended.

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QUESTIONNAIRE

1. Serial No.
2. Name
3. Age in years
4. Date from which working in Diesel Shed
5. Actual nature of present occupation
6. Was the skin affection present when the worker entered the occupation ?
7. Has the skin affection developed during industrial exposure ?
8. If the skin affection has developed in less than 6 months or more than 6 months.
9. Does the worker's body come in contact with H.S.D. oil during his course of duty ?
10. Does the skin affection improve with cessation of exposure ?
11. Which part of the body of the worker comes in contact with offending materials ?
12. What petrol solvents the worker used for cleaning the soiled part ?
13. Does the worker wear any protective gloves ?
14. Is the working environment clean ?
15. Is the worker provided with clean work clothes ?
16. Does the worker change cloths at suitable intervals ?
17. Does the worker use any skin barrier and/or cleanser? If so what is the name ?
18. What are the facilities provided to the worker -
  - (a) Lockers for street clothing
  - (b) Lockers for work clothing.
  - (c) Wash up facility
  - (d) Showers
  - (e) Clean Towels.
19. Foot wear used by worker.
20. Was the worker examined for skin condition periodically at the interval of 2-3 months.
21. History of allergy (Food/drug) and allergic diseases.

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