U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45202

HEALTH HAZARD EVALUATION DETERMINATION
REPORT NO. 75-193-335

GENERAL ELECTRIC COMPANY
COSHOCTON, OHIO

OCTOBER 1976

I. TOXICITY DETERMINATION

A Health Hazard Evaluation was conducted by the National Institute for Occupational Safety and Health (NIOSH) in the mica paper production area of General Electric's Coshocton, Ohio, plant. Environmental sampling was done in January, March, and May, 1976, and medical sampling in March, 1976, regarding potential exposure to mica, free crystalline silica, and nuisance dust.

Findings of this evaluation indicate that some agent, presumably the mica, is causing nasal irritation. Clinical evidence of irritation was observed. No long range permanent or disabling effects would be expected.

II. DISTRIBUTION AND AVAILABILITY OF DETERMINATION REPORT

Copies of this Determination Report are available upon request from NIOSH, Division of Technical Services Information Resources and Dissemination Section, 4676 Columbia Parkway, Cincinnati, Ohio 45226. Copies have been sent to:

a) General Electric Company
b) United Steelworkers of America, Local 4377
c) U.S. Department of Labor - Region V
d) NIOSH - Region V

For the purpose of informing the approximately ten affected employees, the employer shall promptly "post" the Determination Report in a prominent place(s) near where exposed employees work 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)(6), 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 an authorized representative of employees at General Electric's Coshocton, Ohio, plant to evaluate the potential hazards associated with the use of mica.

IV. HEALTH HAZARD EVALUATION

A. Process Description

The area of the G.E. plant covered by this request consists of three operations producing mica paper from raw and scrap mica. Each operation is performed by one man and is physically separated from the others.

The first operation, called "feeding-sorting", involves dumping the mica onto a sorting table from the plastic lined burlap bags in which it was shipped, picking out any rocks or extraneous material, and pushing the mica down a chute into the conveyor system which transports it to the next operation.

In the second operation the mica is dumped onto a conveyor that carries it through an oven and then into a water quench. This heating and cooling causes the mica to expand. It then goes into a grinder and then into a tank where it is mixed with water. Nothing is used in this process other than mica and water. The mica-water slurry is subsequently pumped to the final operation.

The final step is a typical paper making operation. The slurry is laid down in a layer at the front of the paper machine, carried onto a Yankee dryer, and then taken off on a roll which is the end product of this department.

All three operations run three shifts. In addition, on one shift there is a person doing quality control testing in an enclosed room near the paper machine.

B. Evaluation Design

1. Environmental

Atmospheric sampling was done in each of the three areas involved in the mica paper making operation. Sampling for airborne mica was done using battery operated pumps to draw air through a midget impinger containing water. The dust was trapped in the water, and a particle count was performed to determine the concentration. These results were expressed in millions of particles per cubic foot of air (mppcf). Sampling equipment was located in areas near where the employees spend a large part of their working day. Sampling for respirable free crystalline silica was done using battery operated pumps to draw air through a cyclone to eliminate the non-respirable portion and then through a filter upon which the silica was trapped and later analyzed by x-ray diffraction.

These pumps were worn by the workers on their belts, with the filters clipped to their collars. Short duration (one minute) samples were taken for total and respirable dust using a beta-absorption dust monitor. High volume total and respirable samples were taken using electric pumps.

In addition to atmospheric samples, ventilation measurements were made using an Alnor "Senior" Velometer and smoke tubes. Also, bulk mica and settled dust samples were analyzed for free crystalline silica and asbestos fibers.

2. Medical

All ten workers in the mica area, including three operator service men (feeder-sorter area), three paper machine operators, three furnace operators and one quality control inspector, voluntarily agreed to participate in the study. Since the total number of mica workers was only ten, all were included in the study. The employees' duration of work in the mica area ranged from one month to several years. The medical follow-up survey was conducted March 25-26, 1976.

Informed consent was obtained from all workers participating in the study. The procedures performed on all subjects included: (1) administration of a medical questionnaire which emphasized occupational history and the respiratory system. (2) A brief limited physical exam of the external ocular, nasal, pharyngeal, and respiratory systems; blood pressure and pulse were also recorded. (3) Chest x-ray posterior - anterior and lateral views had been obtained earlier the same week at the Coshocton County Hospital and were given to the examining physician upon his arrival. (4) Pulmonary Function Tests were performed using the Vitalograph spirometer; pre-shift and post-shift tests were performed. In addition to these procedures, the medical records of retirees or deceased workers from the mica area were examined at the time of the hazard evaluation; several other records were examined at a later date as it took time to find all the records which were requested.

C. Evaluation Criteria

1. Environmental

The environmental standard given primary consideration was the Threshold Limit Value (TLV) recommended by the American Conference of Governmental Industrial Hygienists (ACGIH).[1] This concentration is 20 mppcf. Additionally, the maximum allowable concentrations for muscovite (4 mg/M^3) and for raw materials with up to 28% free silica (2 mg/M^3) adopted by the USSR were considered.[2]

A concentration of 50 ug of respirable free silica per cubic meter of air is recommended by NIOSH[3] as the standard for occupational exposure to these substances (including quartz, cristobalite, and tridymite). This criteria is the most stringent appearing in current literature.

2. Medical

The reports in the literature concerning hazardous health effects from mica inhalation are sparse and often conflicting. A major question is whether mica alone causes pneumoconiosis; and if it does, whether it is a "benign" or progressive disabling disease. Certainly mica miners and those working in mica processing have been reported to have pneumoconiosis.[6] However, the confusion in the literature stems from the fact that it is not well documented whether mica exposure consisted of a mixed dust containing a fibrogenic material or whether mica was present alone. Failure to take detailed past occupational histories could result in failure of recognition of exposure to fibrogenic compounds in previous occupations.

One must also consider, in reading early reports from the literature, the fact that good analytical methods for dust counting, sizing, and identification either did not exist or were very primitive, so that an attempt to correlate these early reported levels with clinical findings in workers may not be valid. In one study of workers who worked exclusively with "clean mica", ie., that which was thought to contain no free silica or other contaminants, several cases of pneumoconiosis were reported.[5] This would suggest that pure mica may give rise to pneumoconiosis. However, no data is provided in this article concerning chemical analysis of dust which would substantiate that "clean mica" did not contain fibrogenic contaminants.

In a case report, one author presents data on a worker who was employed in a rubber plant, handling and processing dusting powders for rubber products.[11] A mica product had been used extensively for this purpose. The patient had clinical and x-ray findings of pneumoconiosis. At autopsy 30 years after beginning this work, his lungs showed diffuse pigmented fibrosis. On microscopic exam birefringent crystals were present which were shown by x-ray diffraction to be biotite mica; most of the identified crystals showed the properties of mica, but a few, thought to be talc (also used in the rubber industry) could not be definitely identified. Free crystalline silica was specifically looked for and not found. This case suggests the fibrogenic potential of mica. However, even in this case the possibility of talc being an etiologic agent is not excluded. The author who presented the above case subsequently instilled pure muscovite or biotite mica into the lungs of a group of albino rats via intratracheal inhalation. Both types of mica provoked an inflammatory reaction which had largely disappeared one year later.

However, no details were given in this report as to the number of animals used, the extent of pathologic exam or other pertinent aspects of experimental design. Hence there is ample reason to criticize the study.

Tripsa and Rotary[10] studied three groups of fifteen rats which were injected intratracheally with different sizes of mica particles. Each rat was given a single intratracheal dose of 50 milligrams in saline, and was autopsied 12 months later. Histologic exam showed that the two groups injected with particles less than 10 microns showed an inflammatory reaction in the alveoli. However, those injected with large particles (assumingly greater than ten microns) frequently showed foreign body like granulomas in the walls of the alveoli, small bronchi and terminal bronchioles. Thus, this study suggested that lung reactions were dependent upon particle size and occurred only with large particles.

In summary, present evidence is unclear as to whether pure mica can by itself cause pneumoconiosis. Other than the potential pulmonary hazard there are no other known health problems caused by mica.

D. Evaluation Results

1. Environmental

Results of atmospheric sampling indicated concentrations of mica were generally less than 5% of the recommended value. Table I gives the results of samples taken during January and March, 1976.

Personal and hi-volume sampling was done in May, 1976, for free crystalline silica and for dust. Respirable dust concentrations ranged up to 1 mg/M^3. X-ray analysis of personal samples was not conclusive due to the interference of mica and the inherent insensitivity of the methods. By determining the fraction of free crystalline silica in the high volume samples and presuming the personal samples were of similar composition, a personal exposure of less than 20 ug per cubic meter can be calculated for free crystalline silica.

Atmospheric dust concentrations were measured several times in the various areas for one minute periods. These measurements ranged up to approximately 3 mg/M^3 (respirable portion) in the areas around the furnaces, but were below half a milligram per cubic meter in the other areas.

Ventilation measurements in the feeder room ranged from just below 100 feet per minute (fpm) at the operators breathing zone, to just over 200 fpm near the wall, and were approximately 125 fpm in the area where the mica was being sorted and pushed into the hopper. There is no ventilation standard readily applicable to this operation, but the existing ventilation system in this area appears adequate judging from the low dust concentrations. Face velocities on the hoods at the oven inlet

and outlet were generally low. Only on a few occasions did the velocity reach 100 fpm, and at times it was observed that there was actually a flow of air out of these openings.

Analysis of raw mica and settled dust samples for quartz and cristobalite showed a maximum of 3.5% quartz in the settled dust. Analysis of the samples for asbestos fibers was negative.

2. Medical

The reader is referred to Table II for detailed review of symptomatology. Five/ten workers complained of one of more of the following: eyes burning; dry, irritated throat; nasal irritation or dryness. On physical exam redness and swelling of the nasal mucosa occurred frequently.

Two persons were found to have redness and swelling of the conjunctiva, but both cases gave histories of having eye problems not related to their work, and for which they had consulted private physicians.

Symptoms referable to the lower respiratory tract included: cough, chest tightness, and frequent "colds". Table III shows the relationships among worker symptoms, past occupational exposures, smoking history, physical findings and laboratory data.

One worker (#6, Table III) complained of chronic cough with sputum production, was a non-smoker, and had respiratory symptoms prior to the onset of his working at General Electric. This worker had an abnormal physical exam of the lungs, abnormal pulmonary function studies, and abnormal x-ray findings.

Another worker (#5, Table III) gave a history of chest tightness of recent onset, a nineteen pack-year history of cigarette smoking, and a chronic cough occasionally productive of sputum. This worker was found to have a normal physical exam of the lungs, normal pulmonary function studies, but an abnormal chest x-ray which showed "pneumoconiosis" (p 2/2 involving four zones, read according to the UC/ICC classification of pneumoconiosis). This patient gave no previous work history which could explain these x-ray changes. This worker gave a history of a "sinus" type condition at about 10 years of age, but this was short lasting and required no special treatment or medication. He was an athlete and apparently had good endurance abilities in running in high school. Recently he has curtailed at lease one athletic activity because of shortness of breath and easy fatigability.

Another worker (#7, Table III) who had no past history of respiratory disease, but a ten pack-year history of cigarette smoking complained of a cough which started when he began work in the mica area; this worsened after working a shift, and improved after two days away from work. This worker had a normal physical exam of the lungs, and a normal chest x-ray. Before shift pulmonary function tests were normal. However, when post-shift tests were measured there was a 14% drop in FEV_1 and a 7% drop in FVC. This, of course, could be indicative of exposure to an irritant or sensitizing agent which might cause broncho-constriction. These tests were repeated about eight weeks later, and although there was some improvement there was still a 5.9% decrease in FEV_1 and a 7.1% decrease in FVC.

All seven remaining workers had normal chest x-ray readings and normal pulmonary function studies. One of them complained of more frequent "colds" since working at this plant. This worker was one of the group who had erythema of the nasal mucosa.

Blood pressure and pulse rate were normal on all except one worker who was referred to his family physician for evaluation of borderline elevated blood pressure.

Health records were reviewed of workers who were either retired from the mica area or who were deceased. Most of the names were provided by present workers in the mica area. The record review included six persons who were thought possibly to have had disease based on their contact with mica. One of these six (who died of accidental causes) had chronic obstructive lung disease, and several episodes of pneumonia as early as 1957. A chest x-ray on this patient was interpreted in 1969 as showing marked "fibrosis and emphysema." A possibility of bronchiectasis was noted. There was also a positive history given of asthma in this worker and numerous episodes of pneumonia. Another worker's records showed numerous medical problems including hypertension, diabetes mellitus, and also gout. He had one old x-ray which suggested mild fibrotic and emphysematous changes although a more recent x-ray reading was interpreted differently and failed to mention these facts. Another one of this group complained of shortness of breath on one physical exam. He was a smoker; a later physical exam had the examination of the chest and cardiovascular systems checked normal. No x-ray data was available on this patient. Three other records were reviewed and on two of them chest x-rays were shown to be normal, and on another visit there was no x-ray report and not enough data to interpret his health status. Thus, of these six workers one of them did have enough pulmonary disease to suggest at least some pulmonary fibrosis occurring with numerous other problems. However, records are not available as to exactly when he started work or the extent of his work in the mica area. Therefore, no definitive conclusions can be made from this data.

E. Conclusions

A review of the worker data, history and physical examinations of the present mica workers suggests that some agent (presumably the mica dust) is causing naso-pharyngeal irritation. There were numerous subjective complaints of dry or irritated throat, and objective redness and swelling of the nasal mucosa.

The one case of the worker with chest x-ray evidence of pneumoconiosis is disconcerting. Extensive questioning of this worker did not reveal any previous occupational factors that might have caused these changes. In attempting to establish a cause-effect relationship between this worker's abnormal chest x-ray and mica dust exposure at the General Electric Plant several issues should be considered. In the case in question there was an exposure of approximately seven years duration, which could be ample exposure time provided sufficient dose was received. According to two different workers, conditions in at least the oven area where this man worked were extremely dusty in the past. By consensus of those working there now and on the basis of environmental sampling, this is not the case at present. Although respirators were issued in the past, the worker with the abnormal chest x-ray and other workers did not wear respirators on a consistent basis. These factors all suggest that in this worker there may be a relationship between mica dust exposure and the development of an abnormal chest x-ray suggesting pneumoconiosis. It remains unclear from the literature whether mica dust, per se, can cause pneumoconiosis.

It may be possible that the mica dust was contaminated with significant amounts of free silica. There is no question about the fibrogenic propensities of silica. There is indirect evidence that free crystalline silica was present at some time in the working area since a dust sample obtained from one rafter showed what looked to be 3.5% quartz. However, the analyst was unable to give 100% assurance that on analytical measurements the peak which he thought was quartz was indeed quartz. Measurements on air samples taken on a return trip on May 19, 1976, were shown to be within the TLV for quartz. The concentrations of mica dust measured during this survey indicate there is a considerable safety margin relative to the current TLV for mica.

In summary, there is enough evidence, with all factors considered, to suspect either the mica dust or a contaminant therein (quartz) as being a causative agent of this worker's abnormal chest x-ray (pneumoconiosis).

The finding in the survey, a decrement in FEV_1 and FVC from pre-shift to post-shift testing in one worker needs explanation. There are no known compounds in the mica area which would cause sensitization and so-called occupational asthma. It is conceivable that the worker in question is idiosyncratically more susceptible than others to the irritant action of dusts in general. Although there is not enough evidence in this case to implicate any one factor, the drop in post-shift FEV_1 on two different occasions is of enough concern to warrant further evaluation of this patient by a physician.

V. RECOMMENDATIONS

1. An annual physical exam for all mica workers, with emphasis on the pulmonary system, should be performed. Consideration should be given to the development of guidelines concerning suitability for employment in this area based on the status of the respiratory system.

2. Pulmonary function tests to include FEV_1 and FVC should be performed as a preplacement procedure and annually thereafter.

3. An annual or biennial chest x-ray should be performed.

4. Regular, periodic monitoring of the workroom air for free silica and for mica dust content should be performed and appropriate records kept.

5. Strict attention should be paid to the maintenance of the ventilatory equipment. Present systems seem adequate provided they are kept in their present good working condition and are not allowed to deteriorate.

6. In the event that unavoidable short-term, high level exposures to dust occur, properly fitted and maintained respirators should be used by the worker during these intervals.

7. Those workers who have been notified of abnormalities should be followed-up and examined by physicians as they were advised.

8. The results of this study suggest the need for a large scale study of workers using mica in various industries, and also the need for further animal experimentation studies to clearly delineate whether mica produces significant lung disease.

VI. REFERENCES

1. Threshold Limit Values for Chemical Substances and Physican Agents in the Workrrom Environment with Intended Changes for 1975, ACGIH.

2. Occupational Health and Safety, 1972, International Labour Office.

3. Criteria for a Recommended Standard, Occupational Exposure to Crystalline Silica, 1974, NIOSH.

4. Parkes, W.R., Occupational Lung Disorders, Butterworth & Co. (Publishers) Ltd., London, 1974.

5. Vestal, T.F., et al: Pneumoconiosis among Mica and Pegmatite Workers. Ind. Med 12: 11-14, 1943.

6. Dressen, W.C. et al: Pneumoconiosis among Mica and Pegmatite Workers. U.S. Public Health Service Bulletin No. 250, Washington, 1940.

7. Vorwald, A.J., Diffuse Fibrogenic Pneumoconiosis, Ind. Med. Surg. 29: 353-358, 1960.

8. International Labor Office, Encyclopedia of Occupational Safety and Health, Section on Pneumoconioses, Geneva, Switzerland, 1972.

9. Heimann, H. et al: Notes on Mica Dust Inhalation, Arch. Ind. Hyg. & Occ. Med. 531-532, Dec. 1953.

10. Tripsa, R. and Rotaru, G., Experimental Studies on Pneumoconiosis Induced by Mica Dust, Medna Lav. 57 492 (1967).

11. Vorwald, A.J. et al: Mineral Content of Lung in Certain Pneumoconiosis, Arch. Path 74: 267-274, Oct. 1962.

12. Smith, A.R., Pleural Calcification Resulting From Exposure to Certain Dusts, Am. J. Roent. 67: 375-382, 1952.

AUTHORSHIP AND ACKNOWLEDGEMENTS

Report Prepared By:

G. Edward Burroughs
Industrial Hygienist
Cincinnati, Ohio

Ted Donosky, M.D.
Dept. of Occupational Medicine
University of Cincinnati
Cincinnati, Ohio

Originating Office:

Jerome P. Flesch, Acting Chief
Hazard Evaluation and Technical
Assistance Branch
Cincinnati, Ohio

Study Participant:

Arch Carson
Dept. of Occupational Medicine
University of Cincinnati
Cincinnati, Ohio

TABLE I

MICA CONCENTRATION
GENERAL ELECTRIC, COSHOCTON, OHIO
JANUARY 1-15 AND MARCH 26, 1976

	Time	Count (mppcf)*	Remarks
3 1/2 hour sample in feeder room	Jan. 15, am	0.07	
3 1/2 hour sample in feeder room	Jan. 15, pm	0.12	
3 1/2 hour sample, furnace area, outlet end	Jan. 15, am	0.53	
3 1/2 hour sample, furnace area, outlet end	Jan. 15, pm	0.69	
3 1/2 hour sample, paper machine area	Jan. 15, am	0.09	
3 1/2 hour sample, paper machine area	Jan. 15, pm	0.17	
3 1/2 hour sample, furnace area, inlet end	Jan. 15, am	3.07	Fibers & Diatoms also present
3 1/2 hour sample, furnace area, inlet end	Jan. 15, pm	2.88	Fibers & Diatoms also present
6 hour sample in feeder room	Mar. 26	0.42	
6 hour sample, furnace area inlet end	Mar. 26	0.13	
6 hour sample, furnace area, outlet end	Mar. 26	0.17	
6 hour sample, paper machine area	Mar. 26	0.63	

*Particles less than 5 μ in diameter.

TABLE II

MEDICAL SYMPTOMATOLOGY
GENERAL ELECTRIC, COSHOCTON, OHIO
DECEMBER 11, 1975

SYMPTOM, COMPLAINT OR FINDING	NUMBER ANSWERED Yes	No	COMMENTS
Previous occupational exposure to fumes, gases, dusts, vapors	2	8	Neither of the yes responders has any chest complaints or abnormal findings
History of lung disease before working at this plant	1	9	
5 pack-year or greater history of cigarette smoking	6	4	One of the yes responders has been stopped for three years
History of emphysema, bronchial asthma or other known lung disease	1	9	
Excessive shortness of breath after exertion	2	8	
Chronic Cough	3	7	One respondent had this for 30 years, beginning before he began work here; Another yes respondent had a cough which began after coming to work here, is improved if he is off work 2 days; the 3rd worker did not specifically relate his cough to work
Mucous production with coughing	4	6	One worker had moderate amount of daily sputum production; the others all had only very small amounts of sputum daily
Cough up blood	0	10	
Wheezing	1	9	
Is chest affected by cold, damp or foggy weather?	0	10	
History of pneumonia	2	8	One of these was childhood pneumonia
Frequent "colds"	1	9	Yes responder complained of more frequent colds since working here
Chest tightness	2	8	One of the yes responders complained of this only the past 6 months; he has been working here several yrs. he states tightness present all the time now, improves slightly if off work 2 or more days

TABLE II(Continued)

SYMPTOM, COMPLAINT OR FINDING	NUMBER ANSWERED Yes	No	COMMENTS
Eye redness	2	8	One had only occasional complaints; the other has a non-occupational eye disorder
Dry, irritated throat	4	6	
Nasal irritation or dryness	4	6	
Frequent sneezing	1	9	Does not relate this to work
Eye abnormalities on physical exam	2	8	Both yes responders have non-occupational problems
Excessive pharyngeal redness	0	10	
Abnormalities on physical exam of the chest	1	9	Yes answerer had long history of lung disease
X-ray abnormalities	2	8	One was read as pneumoconiosis; the other abnormality occurred in a person with longstanding lung disease
Pulmonary function abnormalities	2	7*	One abnormality was in a person with longstanding lung disease; the other showed a pre- and post-shift decrement in FEV_1 and FVC

*One patient unable to properly mechanically perform the test.

TABLE III

MEDICAL HISTORY AND DATA
GENERAL ELECTRIC, COSHOCTON, OHIO
DECEMBER 11, 1975

PATIENT	POSITIVE OR PERTINENT HISTORY	ABNORMAL OR PERTINENT PHYSICAL FINDINGS	X-RAY	PULMONARY FUNCTION TESTS
1	Previous occ. exposure to fumes, and metal dust; hypertension; 7 pack-yr. history cigarettes, presently stopped; complains dry, irritated throat	Mild swelling, redness nasal mucosa	Normal	Normal
2	"Colds" linger since working here; more frequent "colds" since working here; "colds" improve if off work 2 or more days; Complains dry irritated throat, nasal irritation, eye burning after working; 7 pack-year history cigarettes	Redness of nasal mucosa	Normal	Normal
3	Very small amount sputum coughed up early AM; 11 pack-yr. history cigarettes, presently smokes; dry, irritated nose and throat	Mild redness nasal mucosa	Normal	Normal
4	Previous occupational exposure to noxious sprays; non-smoker	Mild redness nasal mucosa	Normal	Normal
5	Complains of difficulty taking deep breaths; no previous occ. dust exposure; occasional cough with minimal sputum production; chest tightness past 6 months; some improvement after off work 2 or more days; see text for more details; 19 pack-yr. history cigarettes	Chest exam normal	Pneumoconiosis p 2/2 four zones	Normal
6	Well-documented lung disease prior to working here; long history of non-occupational lung disorder; under physicians care; non-smoker	Redness nasal mucosa; had rhonchi over entire chest on auscultation	Abnormal but not pneumoconiosis	Abnormal

TABLE III(Continued)

7	Complained of slight cough early AM, cough for short time after leaving work; 10 pack-yr. history cigarettes, stated his cough began after he began work here, improves after off work 2 or more days; complains eye redness, nasal and throat irritation & dryness; those symptoms worse at work and just after work; nose stays dry	Mild redness, dryness of nasal mucosa; physical exam of chest normal	Normal	Pre to Post Shift decrement (see text)
8	Non-occupational eye disorder, under physicians care; non-smoker	Redness nasal mucosa bilaterally; eye abnormalities	Normal	Not performed
9	Problem with eyelids present before working here, non-smoker	Sl. swelling eyelid margins	Normal	Normal
10	Smokes few packs/week cigarettes; no chest, nose or throat complaints	Sl. redness nasal mucosa	Normal	Normal