ENVIS-NIOH NEWS LETTER

vol.1 No 3

National Institute of Occupational Health

What is a small scale industries ?

An industrial undertaking in which the investment in fixed assets in plants and machinery excluding land and building, whether held on ownership terms on lease or on hire purchase does not exceed Rs. 1 Crore

Small scale Industries in India >>>>

Total No of Units	110.10 lakh
(*** 14.68 lakh Registered & 95.42 lakh unregistered	
Employment	261.38 lakh people
Exports	Rs. 86,013 Crore
(During 2002-2003)	

Source : Ministry of Small Scale Industries

Major industry groups in the small-scale sector >>>

- Food Products
- Chemical & Chemical Products
- Basic Metal Industries
- Matal Products
- Electrical Machinery & Parts
- Rubber & Plastic Products
- Machinery & Parts Except Electrical goods
- Hosiery & Garments - Wood Products
- Non-metallic Mineral Products
- Paper Products & Printing
- Transport Equipments & Parts
- Leather & Leather Products
- Miscellaneuous Manufacturing Industries
- Other Services & Products
- Beverages, Tobacco & Tobacco Products
- Repair Services
- Cotton Textiles
- Wool, Silk, Synthetic Fiber Textiles

LEGAL PROTECTIVE PROVISION >>>

Factories Act 1948	To ensure adequate safety measures and to promote the health and welfare of the workers employed in factories
The employees provident funds & misc provisions Act, 1958	To make provisions for the future of the industrial worker after he retires or for his dependents in the case of this early death
Worker's compensation Act 1923	To provide compensation for workmen in cases of industrial accidental / occupational diseases in the course of employment resulting in disablement or death
The children (pledging of labour) Act 1933	Any agreement to pledge the labour of children in void
The Bidi & Cigar workers (Condition of Employment) Act 1966	Employment of children under 14 years of age prohibited under the laws at SI. No. 2 to 5
Employees State Insurance Act, 1948	To provide for health cover, medical care & cash benefits for Sickness, Maternity, Employment injury, Pensions to dependents in case of death (or) employment injury
The Industrial Disputes Act	To provide a machinery for peaceful resolution of disputes and to promote harmonious relation between employer and workers.
The minimum Wages, Act, 1948	To determine the minimum wages in industry and trade where labour Organizations are non-existent or ineffective

LAWS AND POLICIES APPLICABLE FOR SMALL-SCALE INDUSTRIES IN INDIA

- Workmen's Compensation Act, 1923
- The Trade Union Act, 1926
- The Children (Pledging of Labour) Act, 1933
- The Payment of Wages Act, 1936
- Employers Liability Act, 1938
- The Weekly Holidays Act, 1942
- The Industrial Employment (Standing Orders) Act,1946
- The Minimum Wages Act, 1948
- Employees State Insurance Act, 1948
- The Factories Act, 1948
- The Employees Provident Funds and Misc. Provisions Act, 1952
- The Shops and Establishments Act, 1953
- Employment Exchange (Compulsory Notification of Vacancies) Act, 1959
- Apprentices Act, 1961
- Maternity Benefit Act, 1961
- The Payment of Bonus Act, 1965
- The Bidi and Cigar Workers (Conditions of Employment) Act, 1966
- The Contract Labour (Regulation & Abolition) Act, 1970
- The Payment of Gratuity Act, 1972
- Bonded Labour System (Abolition) Act, 1976
- The Sales Promotion Employees (Conditions of Service) Act, 1976
- Equal Remuneration Act, 1976
- The Inter-state Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979
- Child Labour (Prohibition & Regulation) Act, 1986
- Labour Laws (Exemption from Furnishing Returns & Maintaining Registers by Certain Extablishments) Act, 1988
- The Industrial Disputes Act

SOME OF THE STUDIES CARRIED OUT BY NIOH IN SMALL-SCALE/COTTAGE INDUSTRIES

PREVENTION AND CONTROL OF SILICOSIS AND SILICO-TUBERCULOSIS IN AGATE INDUSTRY OF KHAMBHAT:

Agate is a quartz crystal and a sub-variety of chalcedony. Agate stones are made into beads by heating, chipping, grinding, drilling, and polishing them for use in jewelry and other decorative items. Mineral dust, especially silica produced during the stone grinding.

Health Effects: Study reported high prevalence of silicosis (29.2% and 38.1%) and silico-tuberculosis (14.9% and 27.3%) in present and past grinders respectively. The prevalence of silicosis was 6.8-11.8% and that of silico-tuberculosis was 2.8-6.3% among the non-occupational groups such as neighbours, house-holds and non-grinders. The prevalence of tuberculosis was also very high (27% and 53.7%) in present and past grinders respectively and 18.8-20.1% among the non-occupational groups than the control (3.7%)

Khambhat and surrounding villages, Gujarat
Population involved : About 20,000

Study Populatuion : 2768 (comprising of 397 present grinders, 341 past grinders, 127 households, 314 non-grinders, 748 neighbours and 841 controls)

Study Populatuion : 597 slate-pencil workers
Mandsaur district, Madhya Pradesh

HEALTH HAZARDS OF SLATE PENCIL WORKERS AT MANDSAUR:

Slate making is a traditional village occupation. Mining stone-cutting, groove-making, sorting and packing all produces silica dusts and prolonged exposure causes silicosis in slate workers. Cutting of stone is done with electrically operated steel saw- a dry process and dust is generated in clouds.

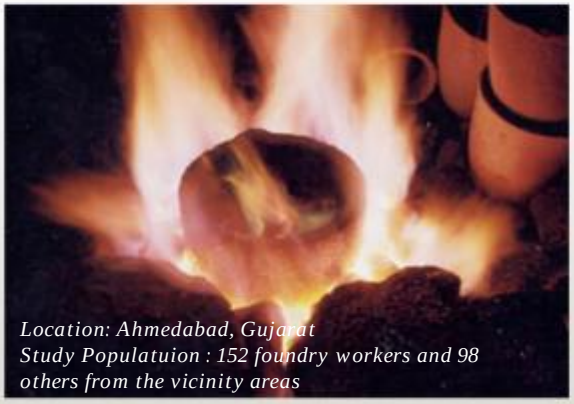
Health Effects: Out of 597 workers 54.65% showed prevalence of silicosis and 17.7% of conglomerate silicosis. 50% of the male workers suffering from silicosis were below the age of 25 years.

SILICOSIS AND SILICO-TUBERCULOSIS AMONG QUARTZ GRINDERS:

Quartz powder is manufactured in small-scale industry by using sedimentary
rock as a raw material. The dust generated during stone crushing, grinding, sieving, screening, mixing, storing and bagging contains high amount of free silica.

Health Effects : Study reported 17.7% silicosis, 5.3% tuberculosis, 23% silico-tuberculosis in quartz grinders.

Location: Chhotaudepur, Baroda district of Gujarat
Study Populatuion : 226 (comprising 120 male and 106 female) having an average exposure of 3.18 ± 2.66 years



Location: Ahmedabad, Gujarat
Study Populatuion : 152 foundry workers and 98 others from the vicinity areas

HEALTH HAZARDS IN AND AROUND SILVER FOUNDRIES

Silver is a precious metal - It is widely used in the production of coins, jwellery and other decorative items. Ahmedabad consisting 106 foundries existing as cottage industries-located in congested residential and commercial zones, engaged in the recovery of silver from old ornaments and various articles. During refining process metallic (Pb, Cd, Ag, Cu, Mn, Zn) and non-metallic (CO, NO2, SO2) fumes are emitted which contaminate the work environment as well as the surrounding community environment.

Health Effects : The mean blood lead level 17.3 (6.5-63.3) mg/dl and blood cadmium level 1.13 (0.08-9.44)mg/dl were found among workers, which were higher than the permissible limit of 10mg/dl (CDC 1991) for lead in blood and 1.0 mg/dl (ACGIH, 1997) for cadmium in blood.

SOME OF THE STUDIES CARRIED OUT BY NIOH IN SMALL-SCALE/COTTAGE INDUSTRIES

Location: Jaipur, Rajasthan
Population involved: 2 lac
Study Populatuion : 586 child laboureres with the mean age of 11.31 ± 5.34 years

Occupational Health Problems, Evaluvation and Control - A Study in Gem Polishing Industries at Jaipur

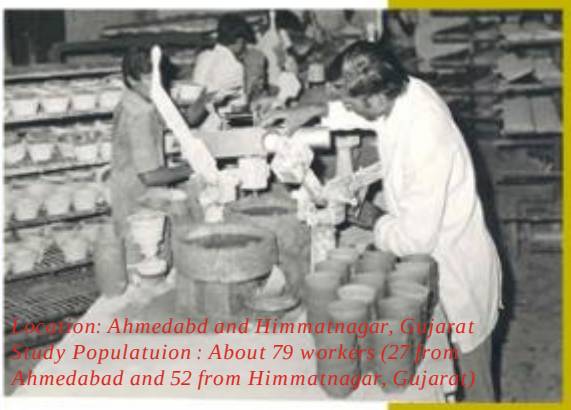
Jaipur, Rajasthan, where 95% of the exported gemstones in India are cut, shaped and polished. Children are very commonly engaged as "apprentices" and are exposed, during Processes (such as cutting, faceting, polishing) in gem polishing industry to dust i.e. free silica, noise and illumination.

Health Effects: The chest radiography revealed that 4.3% of the subjects had tuberculosis while 2.7% had hilar gland enlargement and/or calcification. Common symptoms included respiratory symptoms in 27%, eyestrain in 29.5%, headache in 28.8% and repeated finger injuries during work in 37.5% of child labourers were also reported.

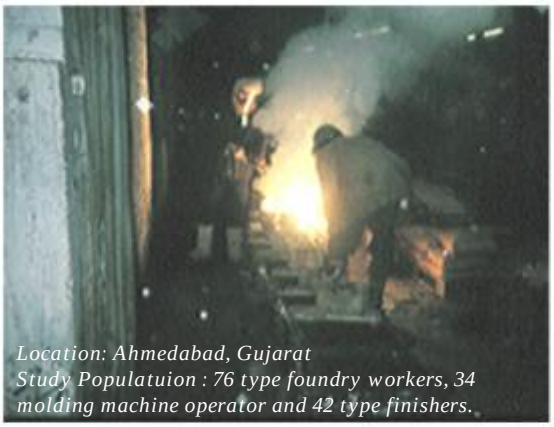
RESPIRATORY MORBIDITY AMONG POTTERY WORKERS

Clay (Kaolin and Ball clay), quartz, feldspar, calcite and various coloring materials for glazing are the main raw materials used in the manufacture of pottery and ceramic. Among different work processed followed jolly jiggar is the major process where silica dust is generated.

Health Effects : The prevalence was very high for pulmonary tuberculosis (43%) followed by bronchial asthma (22.7%). The prevalence of chronic respiratory symptoms such as chest pain (86%), breathlessness (84.8%), cough (75.9%) and sputum (70.9%) was also very high.



Location: Ahmedabd and Himmatnagar, Gujarat
Study Populatuion : About 79 workers (27 from Ahmedabad and 52 from Himmatnagar, Gujarat)



Location: Ahmedabad, Gujarat
Study Populatuion : 76 type foundry workers, 34 molding machine operator and 42 type finishers.

STUDY OF WORKERS EXPOSED TO INORGANIC AND ORGANIC LEAD IN VARIOUS TYPES OF INDUSTRIES

Small-scale industries manufacture different types of small and big articles using heavy metals and their salt. Lead is one of the important heavy metals, which has also been used in different industries like printing, type foundries, storage battery manufacturing, pigment industry etc. Gujarat has a number of small type foundry units employing about 10-15 workers each and some of these small units are located in the Ahmedabd city.

Health Effects : Parameters such as lead in blood (Pb-B), lead in urine (Pb-U), erythrocyte, Delta Amino Levulinic acid Dehydratase (ALA-D), Corproporphyrin in urine (CP-U), Haemoglobin (Hb), Hematocrit (PCV), RBC and WBC were studied. No significant difference in the levels of Pb-U, CP-U, ALA-U of lead exposure between the type foundry workers and unexposed subjects were observed. However, a difference between type foundry workers and unexposed workers in Pb-B and ALA-D activity in erythrocytes significant at 1% level was found indicating the early lead absorption by these foundry workers.

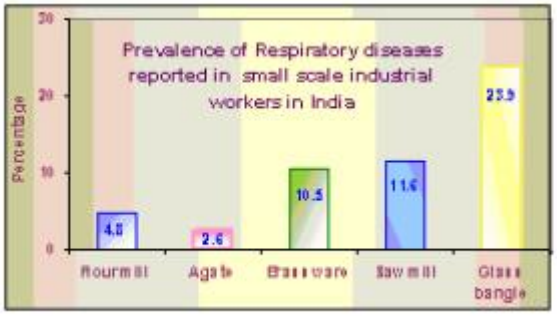
News

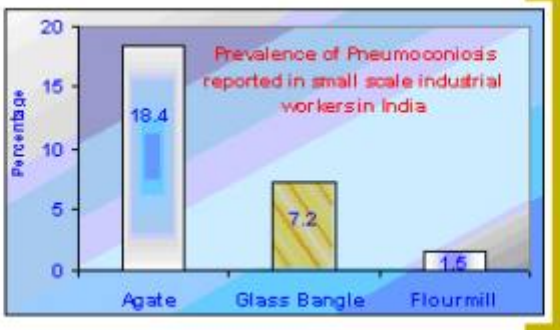
Toxicovigilance by NIOH Poison Information Centre Benzene poisoning in Diamond Workers

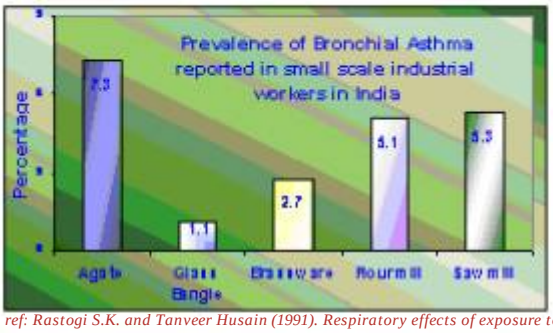
On 21st June 2005, three cases of Aplastic anemia were brought to the notice of Poison information Centre. All were young males who had been working in a diamond cutting and polishing unit at Surat for the past 2 years. They had been using a solvent along with a whitener for marking the rough facets on diamonds. GC MS analysis of the solvent at NIOH showed it to be pure Benzene. All cases are undergoing treatment at various hospitals in Ahmedabad and these hospitals have been regularly calling NIOH Poison Centre for poisoning related cases.

NIOH Poison Centre swung into action and the Dept of Industrial Health and Safety was notified about the incident. The problem was reported to the media and it was highlighted in newspapers and television. Govt of Gujarat has initiated immediate action to carry out surveys in diamond industries. The diamond industry has also issued directives to ban the use of Benzene with immediate effect. For More Information log in to www.nioh.org/news.htm

Health effects reported in small scale/cottage industries in India by others







INDUSTRY	LOCATION	NO. OF SUBJECTS STUDIED
• Agate	Khambhat	372
• Glass Bengle	Firozabad	580
• Brassware	Moradabad	134
• Sawmill	Lucknow	109
• Flour mill	Lucknow	319

ref: Rastogi S.K. and Tanveer Husain (1991). Respiratory effects of exposure to environmental pollutants. Indian J. Indust. Med. Vol. 37 No. 1 pp 23-31.

Control technology developed and implemented by NIOH in small scale/ cottage industries

Agate -

Local exhaust system developed and fitted over grinding machine along with bag filter especially designed for agate grinding. To reduce electricity consumption, the emery wheel and blower were rotated with the same motor by attaching it to a pulley

Reduced dust by about 93% in the work environment

Quartz crushing -

The crushing process involves jaw crusher, disintegration, screening and bagging. Dust control device was developed with bag filter and installed at 15 units. Since jaw crusher is outside the shed, separate dust control device was developed and installed with 2 hp motors. Efficacy of the system was tested. Dust was collected in bag filter. This prevented dust pollution in the vicinity of crushing units.

Reduced dust about 75-85%

Control technology developed and implemented by NIOH in small scale/ cottage industries >>>

Stone quarry

Developed a protective shield of dust hood made of an iron frame covered by an acrylic shield at its roof and cloth on its sidewalls. The dust hood could be fitted to a chisel. The height of the hood could be adjusted

Workers satisfied with this device as it reduced the dust exposure

Welding process

Two- a portable and a mobile unit of local exhaust system developed. Basically each unit consists of an electric motor, a blower and a fume hood.

Significant reduction of exposure to welding fumes

Future Needs

- National policies need to be formulated to improve health and safety of all workers in small-scale industries.
- Hazardous units should be covered under Factories Act
- Occupational health services for small-scale industries need to be integrated with the existing health systems providing Primary Health Centers
- Training for occupational health personnel is needed
- Adequate communication systems are needed to ensure the free flow of occupational health and safety information among workers, management NGO'S and Occupational health personnel at all levels
- Industrial hygiene which measures and controls environmental hazards, is an essential part of occupational health care. Appropriate Industrial hygiene services and skills should be introduced into the service both centrally and peripherally.
- Engineering control technology should be developed to minimize the exposure

Important Weblinks >>>

www.ssi.nic.in
www.smeindia.com
www.smallindustryindia.com
www.lacecon.org
www.nisiet-cluster.org
www.nsicindia.com

Events - At NIOH

Institute has organized a training course on "Environmental Health Impact of hazardous waste and their Remedial Measures (SHW-6)" sponsored by CPCB from 14-18 March 2005 to train the personnel working in the field of Environmental Health and Toxic Hazardous Waste Management. Twenty-five participants from State Pollution Control Boards (12), Research organizations and Educational Institutions (10) and Public sector/ private organization (3) from the country were registered for the course. The eminent scientists from NIOH and expert faculties delivered lectures on the following topics

1. Introduction to solid waste management, including hazardous and bio medical wastes.
2. Physico-chemical & biological analysis of solid wastes (bio-medical & Hazardous wastes).
3. Environmental and health issues related to hazardous wastes.
4. Health effects due to heavy metals, pesticides, dioxin and furan.
5. Communicable diseases (like gastrointestinal disorders, diarrhoea, skin disease, jaundice, etc).
6. Air and water quality deterioration due to toxic hazardous waste.
7. Environmental health risk assessment and impact due to hazardous waste.
8. Legislation related to Municipal Solid waste management, Bio-medical waste (Management and Handling Rules) and industrial wastes including hazardous wastes.
9. Control of toxic hazardous waste through different engineering/technological environmental friendly methods

Field visit to Enviro Infrastructure Ltd., Bharuch for hazardous waste management facility and Envision Enviro Engineers Pvt. Ltd., Surat for Common Biomedical Waste Treatment facility was arranged for participants to exhibit storage, treatment and management of solid/biomedical waste.

Institute has started a three months certificate course "Associate Fellow of Industrial Health (AFIH)" from 1st April 2005 that has been recognized by the Directorate General Factory Advice Services and Labour Institutes (DG-FASLI), Ministry of Labour, Government of India with following objectives

- To orient, train and enable medical graduates in identifying and managing occupational diseases and disorders encountered in various institutes.
- To enable doctors to suggest, preventive and control measures in respect of such occupational diseases.
- To advice, supervise and participate in National Occupational Health Programmes of promoting health of industrial workers thereby improving national productivity and prosperity.
- To manage elimination/mitigation of hazardous incidents and work injuries at sites.

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