OCCUPATIONAL HEALTH PRACTICE IN INDIA

RAMAZZINI DAYS 2007 - JUBILEE CELEBRATION
25th Anniversary of the Collegium Ramazzini
25-28 October 2007
Carpi, Italy
T K Joshi
Director Occupational and Environmental Medicine programme
E Mail: kantjoshi@gmail.com
CONSUMPTION: EXPANDING MIDDLE CLASS
India To Have 4th Largest Number Of House Holds Earning > US $5000

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>Year</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>Japan</td>
<td>2004</td>
<td>Japan</td>
</tr>
<tr>
<td>2004</td>
<td>Germany</td>
<td>2008</td>
<td>Japan</td>
</tr>
<tr>
<td>2008</td>
<td>UK</td>
<td>2008</td>
<td>India</td>
</tr>
</tbody>
</table>

Source: EIU Country Data
INDIA: ECONOMIC RESILIENCE
Least Volatile Economic Growth

Maximum-Minimum GDP Growth Rate (1993-2006)

% GDP growth

India  Taiwan  S Korea  Thailand  Singapore  Hongkong  Malaysia

Source: EIU; World Bank; IMF; Literature review
CONFIDENCE: INDIA INC. GOING GLOBAL

Overseas Acquisitions by India Inc ($ US Million)

Source: Literature Review
Campus
Centre for Occupational and Environmental Health, Maulana Azad Medical College (MAMC)

- Amongst 10 best medical schools in India out of a total of nearly 400,
- A 1700 beds tertiary care hospital,
- 500 beds super specialty hospital,
- A 300 beds super specialty eye hospital,
- A super specialty paediatric hospital,
- Most modern dental school,
- College of nursing
- Providing graduate, post graduate, super
- specialty medical education, training and research
SIR! THIS DATA TOTALLY DISCREDES HSE WORKPLACE ILL-HEALTH NUMBERS!

I THINK IT WOULD BE ADVISABLE TO GO THROUGH IT AND RECALCULATE THE NUMBER OF WORKPLACE VICTIMS!

I DON'T HAVE TIME FOR THAT KIND OF PIFLING DETAIL!

I'M TOO BUSY COUNTING THE COST TO INDUSTRY!!
Employment in 1999 - 2000

- Agriculture: 61%
- Others: 31%
- Construction: 3%
- Organized: 5%
India

- 418,505 deaths in India were due to injuries in 1999,
- Increase of 5.2 per cent compared to previous year.
- 62 per cent deaths - in the age group of 15–44 years, More in men,
- Major causes; Transport, predominantly RTIs (81,036), burns (32,000), suicides (110,000); more in rural than in urban areas
- Agricultural and occupational injuries excluded. Injury prevention efforts by the police, transport and legal sectors; no involvement of health sector in prevention.

- WHO-SEARO; Injury Prevention and Control in the South-East Asia Region
OCCUPATIONAL DISEASES IN MANUFACTURING ACTIVITIES

• In Delhi no reporting of occupational disease in last 3 years in 94 factories inspected and 1035 workers examined.

• No pathological investigations or x-rays carried out.

• Source:: Labour Statistics, Planning & Statistical Cell, Government of NCT of Delhi
# Occupational Diseases- Maharashtra-2001

<table>
<thead>
<tr>
<th>No. of cases</th>
<th>Name of occupational disease</th>
<th>Harmful agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Byssinosis</td>
<td>Cotton dust</td>
</tr>
<tr>
<td></td>
<td>Byssinosis</td>
<td>Cotton dust</td>
</tr>
<tr>
<td>7</td>
<td>Noise Induced Hearing Loss (NIHL)</td>
<td>High noise level</td>
</tr>
</tbody>
</table>
Tamilnadu – 2003-04

- 4 cases of Byssinosis, 1 of Silicosis.
- Byssinosis reported from the Textile Industry.
- Lone case of Silicosis reported from the Ceramic industry.

- Source; DGFASLI, Union ministry of labour, government of India
West Bengal

- Occupational Disease cases detected and compensated by Special Medical Board in year 2000

<table>
<thead>
<tr>
<th>Occupational Disease</th>
<th>No of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestosis</td>
<td>3</td>
</tr>
<tr>
<td>Byssinosis</td>
<td>2</td>
</tr>
<tr>
<td>Silicosis</td>
<td>13</td>
</tr>
</tbody>
</table>

- Total 18
## Occupational Disease-West Bengal

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Occupational Diseases</th>
<th>No of Cases</th>
<th>2001</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Silicosis</td>
<td>8</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>Silico TB</td>
<td>2</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Talcosis</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Byssinosis</td>
<td>1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Asbestosis</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Jute Byssinosis</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Other Pneumoconiosis</td>
<td></td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

| Total  |                      |             | 14   | 23   |
• AP- Six cases of poisoning by Nitrous fumes and one Asbestosis notified under section 89 in an industry having NIC 26 (upto the year ending 31/12/02).

• Directorate General of Factories Advisory Service and Labour Institutes, Mumbai
Number of workers dead due to silicosis: MP

*Figures from 1999 onwards were not available.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>27</td>
<td>22</td>
<td>29</td>
<td>15</td>
<td>18</td>
</tr>
</tbody>
</table>
States Reporting no occupational disease

- Kerala
- Goa
- National Capital Territory of Delhi
- Uttar Pradesh
- Orissa
- Union Territory of Chandigarh
- Assam
- Himachal Pradesh
- Rajasthan
- Gujarat
- Jharkhand
- Karnataka
- Tripura
- Uttarakhand

Union Ministry of Labour, Government of India; http://dgfasli.nic.in/pub1.htm
Occupational risk management:

(1) Strengthening of OHS policy;
(2) Enforcing engineering control and environmental monitoring;
(3) Biological monitoring & health promotion, and
(4) Planning and epidemiological surveillance.

• Regional Strategy for Occupational Health; Report of an Inter-country Consultation WHO-SEARO, New Delhi, 28-29 April 2003
• Activities of Centre for Occupational and Environmental Health
## Capacity Building Through Sustained Training

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TRAINING PROGRAMMES</th>
<th>PHYSICIANS</th>
<th>NURSES</th>
<th>OTHERS</th>
<th>TOTAL HEALTH CARE WORKERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>17</td>
<td>18</td>
<td>316</td>
<td>30</td>
<td>364</td>
</tr>
<tr>
<td>1999-00</td>
<td>51</td>
<td>413</td>
<td>544</td>
<td>77</td>
<td>1034</td>
</tr>
<tr>
<td>2000-01</td>
<td>35</td>
<td>424</td>
<td>692</td>
<td>95</td>
<td>1211</td>
</tr>
<tr>
<td>2001-02</td>
<td>42</td>
<td>723</td>
<td>798</td>
<td>145</td>
<td>1666</td>
</tr>
<tr>
<td>2002-03</td>
<td>32</td>
<td>400</td>
<td>353</td>
<td>261</td>
<td>1014</td>
</tr>
<tr>
<td>2003-04</td>
<td>32</td>
<td>242</td>
<td>247</td>
<td>132</td>
<td>621</td>
</tr>
<tr>
<td>2004-05</td>
<td>29</td>
<td>237</td>
<td>439</td>
<td>189</td>
<td>865</td>
</tr>
<tr>
<td>2005-06</td>
<td>50</td>
<td>441</td>
<td>565</td>
<td>529</td>
<td>1535</td>
</tr>
<tr>
<td>2006-07</td>
<td>26</td>
<td>266</td>
<td>182</td>
<td>305</td>
<td>753</td>
</tr>
</tbody>
</table>
TRAINING PROGRAMME

ON

Hazardous Materials Management and Auditing—A Global Perspective

VENUE

DELHI - APRIL 1-5, 1996
CALCUTTA - APRIL 8-12, 1996

Organized By
Society for Environment and Health
New Delhi

In Collaboration with
Cornell University, U.S.A.
Training Programme
On

INTERNATIONAL TRENDS IN PREVENTING
WORK RELATED DISORDERS-
THE ERGONOMICS APPROACH

March 1997

VENUE:
Calcutta: 3-6 March, 1997
Delhi: 10-13 March, 1997

Course Director
Dr. T.K. Jhajh, National Consultant for World Health Organization (WHO)
Dr. Biren B. Bihari, Department of Industrial Engineering, University of Nebraska
Dr. Manoj Kumar Menon, Director, Ergonomics Concepts, New York
Mr. Tom Allen, Chief Ergonomist of Sea Cooperation, USA
Delhi Kalyan Samiti
Project

A HEALTH SURVEY
TO DETERMINE THE
ADVERSE HEALTH IMPACT
OF POLLUTION IN DELHI

Report
1998

Prepared by

SEH
Society for Environment and Health
NEW DELHI
Second Fogarty Indo-US National Training Programme

On

Diesel Particles: Health Effects, Monitoring, and Regulation

Organized by
Center For Occupational and Environmental Health
Lok Nayak Hospital, New Delhi

In Collaboration with
C O E H University of California, Berkeley
USA

Ministry of Environment & Forests, Govt. of India
Workshop on
Improving Productivity through Health & safety in
Cold Storages
[Cold-Working Environment]
18th August, 2000

Venue
Claridges Hotel
New Delhi

Organisers

Centre for Occupational & Environmental Health
in Collaboration with
Department of Labour
Govt. of NCT Delhi
LNJP Hospital to host meet on exposure to asbestos

EXPRESS NEWS SERVICE
NEW DELHI, SEPTEMBER 7

THE Centre for Occupational and Environmental Health (COEH) is organising an international conference on 'Exposure in India' on September 12 at the Lok Nayak Jaya Prakash Narayan Hospital.

Leading international experts like Barry Castlesman from the US will participate in the conference, which will address issues relating to the use of asbestos, including resultant health hazards, and ways to phase it out. The World Health Organisation, the International Agency for Research in Cancer, the United States Environmental Protection Agency, the Department of Health and Human Services and Collegium Coeh have stated that all forms of asbestos are responsible for numerous diseases, including lung cancer.

Many countries have imposed restrictions on asbestos, some have banned it entirely. In Europe, the use of asbestos or products containing asbestos will not be allowed after June 2005. Over seventy per cent of the world's asbestos is used in Eastern Europe and Asia. Canadian asbestos manufacturers have tried to promote asbestos use in India. Interestingly, in Western Europe, Scandinavia, North America and Australia, the manufacture or asbestos peaked in the 1970s. Canada dominated the world trade with its annual export of about 500,000 tons.

COEH, the technical arm of the Delhi government, is part of the Maulana Azad Medical College. The Centre was created to deal with occupational and environmental health concerns.
Employee Distribution

N = 128

- 1-25 employee: 50%
- 26 - 50 employee: 18%
- 51 - 75 employee: 21%
- 76 and above: 11%
Eye Disorders
N = 128

83%
17%
Percentage of Peptic ulcer cases
(Prevalence in India- 0.7%)
N = 128

- Peptic ulcer: 7%
- Normal: 93%
Medical courses rejig soon: Bhanu

HT Correspondent
Ranchi, May 12

HEALTH MINISTER
Bhanu Pratap Shahi on Saturday announced to include 'Health and Environment' in the curriculum of all three medical colleges in the State soon.

Inaugurating a workshop on 'Environment, Health and Safety Management' covered under the World Bank-assisted capacity building project he said concrete measures are needed to check the rampant deforestation. Cautiously against environmental pollution by big companies, he said recently a number of children were born blind in a Giridih village.

Special Secretary Health, Nidhi Khare laid stress on giving importance to environment and limited exploitation of natural resources. She said some major problems like Jharia fire were an outcome of unplanned use of resources. "Only 3 per cent of the villagers in the State have toilet facilities. This needs to be improved for a healthy environment," she said.

Dr TK Joshi from the World Bank (WB) said the bank is running a Rs 350-crore project for environment. WHO had identified four major challenges for the country, with water on the top. "Ninety per cent of the people in the country are deprived of safe drinking water. Merely ensuring potable water to far-flung rural areas would reduce the occurrence of diseases by 50 per cent," he said. Stressing the need for creating awareness among the people he said education alone helped Cuba score above USA on the health index. Dr Joshi said the country needs 8,000 doctors.

Speaking on the rampant top-soil erosion, environmental scientist Dr Suresh Prasad Singh said, "The State has 30,000 million cubic metre water. But only 10,000 million cubic metre can be used. Nearly 78 per cent of the water goes to river due to improper management," he said. State Public Analyst and former Joint Food Controller, Bihar, JK Singh said the workshop organised by the Centre for Occupational & Environmental Health and supported by Food and Drug Administration Department would benefit the State.

Additional Secretary, Health, RS Jaipuria, Director, RIMS, Dr NN Aggarwal, Director, RINPAS, Dr PK Chakraborty, State Food Controller Dr Pradeep Kumar Singh and DMA State Secretary Dr RC Jha also addressed the workshop. State Drug Controller MM Prasad proposed the vote of thanks. Nearly, 40 delegates attended the meeting, including Food Controller and Drug Controller from Bihar.
WORKSHOP ON
OCCUPATIONAL HEALTH NURSING
ORGANIZED BY
CENTRE FOR OCCUPATIONAL
AND
ENVIRONMENTAL HEALTH (MAMC)
22nd-26th AUGUST 2007
Preventive Methods

- Taking regular breaks
- Alternative work tasks
- Regular stretching
- Comfort equipment: footrest, wrist rest, document holder
- Keeping mouse and keyboard at the same level
- To hold the mouse lightly and click gently
AS IF the intense heat this year was not enough, new data from the Central Pollution Control Board now suggests that Delhi’s air now poses risks greater than ever before to your lungs.

An analysis of the air-pollution data by the Centre for Science and Environment (CSE) shows that the city’s daytime air this summer has been very high on ground-level ozone. This has resulted from a reaction between pollutants like nitrogen oxide (NOx) and hydrocarbons in the sun’s ultraviolet rays, causing the strong-smelling Ozone to form. Anumita RoyChowdhury, associate director, CSE, said, “Ozone levels are said to be higher in summer. But uncommonly high levels have been recorded this year.”

The analysis shows that ground-level ozone, known as “bad ozone,” was almost twice the permissible limit set by the WHO, which is 100 mg/cubic metre for an eight-hourly average. The ozone layer in the atmosphere, however, is good protection from the sun’s ultraviolet rays.

In Sri Fort, the maximum level touched a dangerous 184.4 mg/cubic metre on June 16, while Bowana recorded 197.7 mg/cubic metre. The last time bad ozone crossed the WHO limit was in 2001, at 140 mg per cubic metre.

Dr. T.K. Joshi, head, Centre for Environment and Occupational Health, said: “People with cardiovascular ailments and asthma are at grave risk.” The Environmental Protection Agency of the US said in a recent report titled Ozone-Good Up High Bad Nearby, that “ground-level ozone in the US is responsible for an estimated $500 million in reduced crop production, affecting the landscape of cities.”
Govt hospitals plan to do away with mercury in instruments

Avishek Dastidar
New Delhi, June 12

SOON, ALL hospitals under the Delhi government will stop using instruments that contain mercury.

Alarmed by growing global concern over the ill effects of mercury in the healthcare and environment sectors, the Health department has decided that a long-term and short-term policy is needed to enable a complete phase-out of this toxic metal.

A committee, comprising of several medical experts, has been set up under the Dean of Maulana Azad Medical College (MAMC) to look into all the aspects and submit recommendations to the government within a month.

"We will be holding meetings and practical recommendations will emerge after thorough brain-storming," said Dr. Arun Aggarwal, Dean, MAMC, while talking to Hindustan Times.

The total phase-out will ensure that all medical facilities of the Delhi government are environmentally safer, said Delhi Health Secretary DS Negi. "Apart from total replacement of mercury, we must also focus on the proper ways of disposing mercury currently in use," added Negi.

Dr. TK Joshi, Member Secretary of the committee and head of MAMC’s Centre for Environment and Occupational Health, said the committee would look into "all aspects of mercury use into ‘all aspects of mercury use into health and environmental safety is more important than financial considerations. The committee has been asked to look into replacement options as well," Negi said.

A few months ago, NGO Toxics Link had carried out a study which showed that two reputed hospitals in the Capital were checking with mercury due to everyday breakage of instruments carrying the metal. The study had shown that around 70 thermometers broke at each of the more than 300-bedded hospitals every month.

"Mercury evaporates under room temperature and pollutes the air. Exposure to mercury severely affects the nervous system and it takes a long time for the body to get rid of this toxin," said Prashant Paraste, Toxics Link.

Meanwhile, St Stephen's hospital, which has been trying to stop the use mercury by going for digital instruments, is facing a peculiar problem. Many digital thermometers are getting stolen. "Our hospital has around 250 such thermometers. Being around 10 times costlier than mercury-based thermometers, many of them are getting stolen," said Alfred Madoc, spokesperson of the hospital.

Until we are in the process of replacing all mercury-based instruments with digital ones," she said.
Govt puts its hospitals on mercury-free drip

Avishek G. Dastidar
New Delhi, July 14

In a year and a half, the Delhi government will replace all its hospitals and nursing homes with non-mercury instruments. The Health Department has already accelerated the mercury phase-out programme, to be completed by the end of the financial year. This phased out programme, to be completed by the end of the financial year.

These payments were raised on Saturday at a meeting of the health department, attended by representatives of hospitals. The programme was discussed in detail, and representatives of hospitals discussed how the transition to mercury-free instruments could be done in a year and a half.

Estimates prepared by the Centre for Occupational and Environmental Health (COEH) of Maulana Azad Medical College, which is part of the programme, show that 15 Delhi government hospitals used 26,000 mercury thermometers and 2,800 blood pressure instruments last year. A digital thermometer costs Rs 200 and a digital BP instrument costs about Rs 2,500. It will take around Rs 12 lakh to replace all the mercury-based instruments.

"We are planning to replace all mercury-based instruments with digital in a year and a half. The programme is aimed at reducing the use of mercury in hospitals," said Dr T.K. Joshi, head of COEH and member secretary of the government panel.

The programme may not take long before all government hospitals establish the use of mercury-free instruments. Delhi Director General of Health Services told the Hindustan Times that the panel's recommendations are expected to be followed in the immediate future.

"The use of mercury instruments will be phased out gradually. The recommendation of the panel is that the programme will be completed by the end of the financial year," he said.

As the recommendations were executed, the COEH would prepare an inventory of how mercury is used in the hospitals. Most of the hospitals have substituted mercury with digital instruments. Many have also disposed of mercury through amalgam fillings.

"So, not just thermometers and sphygmomanometers, a holistic approach will be needed in chalking out the plan," said Prabhat Patore of NGO Textile Link during the meeting.

"Each hospital discharges around 3 kilograms of mercury in the environment every year in Delhi. A thermometer contains enough mercury to contaminate a 20-acre lake so much that its fishes become unfit for consumption. So the problem is enormous," he said.

"The recommendations of the panel have been studied in detail. The entire set of recommendations will be handed over to the health department on Monday."

Medical uses of mercury in hospitals

- In thermometers
- Sphygmomanometers (blood pressure monitors)
- Esophageal dilators (also known as bougie)
- Cantor tubes and Miller Abbott tubes (used to clear intestinal obstructions)
- Feeding tubes
- Dental amalgam
- Laboratory chemicals (fixatives, stains, reagents, preservatives)
- Mercury batteries

Non-medical use

- Cleaning solutions with caustic soda or chlorine
- Mercury contamination during production process
- Batteries
- Fluorescent lamps and high-intensity lamps
- Non-electronic thermometers
- Heads of refrigerators
- Some electrical switches used for lights and appliances

A DigitaL Thermometer costs Rs 200 and a digital BP instrument costs Rs 2,500. It will take only Rs 12 lakh to replace all mercury-based instruments.

- Dr T.K. Joshi, head of Centre for Occupational and Environmental Health.
Facing Challenges

• MEKP associated explosions – 20 deaths in less than 2 weeks in 1996 in New Delhi
MEKP

- May explode if heated,
- Reacts violently with combustibles and organic material,
- Incompatible with flammables,
- Tumorigen,
- Systemic poison,
- Very destructive of mucous membranes,
- Severe irritant and Lachrymator.
1996

• A case of asthma due to air fresheners
• Case of professor studying chromosomes,
Occupational / Environmental Illness - 1995

- This 55 years old lady experienced fatigue, tiredness at each day end, periodic chest infections, anemia, chapping of skin, and vitiligo since 15 years, while making blood films for studying chromosomes,
- Had Subtotal thyroidectomy in 1983
- Was on Hormone replacement,
- Two post graduate female medical students also had similar complaints.
• Hb- 11.7 gm/dl,
• Platelets-148,000/mm³
• Lymphoblastoid transformation of lymphocytes,
• Low expression of Complement C₃ fraction,
• Cause?
On a July evening 300 workers, mostly women, were taken ill suddenly allegedly following a gas leak. By next morning the number rose to 600 with nearby hospitals flooded with victims complaining of nausea, shortness of breath, headache, dizziness, a racing heart, a stomachache or diarrhea, diagnosis of toxic gas exposure, water pollution, building related asthma, obscure viral infection, and suffocation were made by the physicians.
• I was asked to investigate and submit a report within 6 hrs and plans were on to move nearly 150,000 inhabitants from this highly congested area;

• In next two hours I established diagnosis of ‘Mass psychogenic illness’, seconded by the head of psychiatry:
  • No gas use,
  • Predominantly female victims of low socio economic status and lowly literate,
  • Dysosmia, cacosmia, and phantosmia,
  • A Hostile and unkind management with an archaic work organization created extreme anxiety by the threat to close down the factory.
WHO Funded Study

• The unhealthy worker effect.
• Workers suffered more tuberculosis, 24/1000,
• Had higher prevalence of anemia (42 per cent) compared to community
• Cross sectional survey of Healthcare workers in New Delhi following sensitization
## Occupational Category and Health Risks

<table>
<thead>
<tr>
<th>Occupational Category or Description</th>
<th>Exposure to Risk Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance Workers</td>
<td>Solvents, asbestos, and electrical hazards</td>
</tr>
<tr>
<td>Boiler Room Operators</td>
<td>High levels of noise and heat</td>
</tr>
<tr>
<td>Housekeepers</td>
<td>Detergents and disinfectants, improperly discarded needles and sharp objects</td>
</tr>
<tr>
<td>Food Service Workers</td>
<td>Sharp-edged equipments, hot surfaces, slippery floors, microwave ovens</td>
</tr>
<tr>
<td>Nurses and Physicians</td>
<td>Toxic substances, radiation exposure, shift work</td>
</tr>
<tr>
<td>Radiology Technicians</td>
<td>X-rays and radioactive isotopes, chemical hazards</td>
</tr>
<tr>
<td>Operating Room Personnel</td>
<td>Waste anesthetic gases, sharp instruments</td>
</tr>
</tbody>
</table>
Socio-demographic profile (Age)

Total n = 1199

- 628 (53%) 30-49 years
- 365 (30%) Less than 30 years
- 136 (11%) 50 years and older
- 70 (6%) Missing

Missing data: 1199 - (628 + 365 + 136 + 70) = 1199 - 1249 = 50
Socio-demographic profiles - Gender

<table>
<thead>
<tr>
<th>Category (Age in Groups)</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>245</td>
<td>20.43</td>
</tr>
<tr>
<td>Female</td>
<td>929</td>
<td>77.48</td>
</tr>
<tr>
<td>Missing</td>
<td>25</td>
<td>2.09</td>
</tr>
<tr>
<td>Total</td>
<td>1199</td>
<td>100</td>
</tr>
</tbody>
</table>
Socio-demographic profile - Occupation

- Physician: 33.28%
- Nurse: 56.80%
- Technician: 4.42%
- Others: 3.59%
- Missing: 1.92%
Exposures Experienced

- Powders: 44.30%
- Glutaraldehyde: 43.30%
- Dust: 40.10%
- Other Chemicals: 29.20%
Exposure Profiles

- Powders
- Glutaraldehyde
- Dust
- Other Chemicals
- Noise
- Heat
- Infected Blood
- Acids
- Gases
- Smoke
- Cold
- Fumes
- Vapor
- Alkali
- Radiation
- Aerosols
- Vibration
## Smoking Habits

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>15</td>
<td>1.25</td>
</tr>
<tr>
<td>Former</td>
<td>32</td>
<td>2.67</td>
</tr>
<tr>
<td>Never</td>
<td>1054</td>
<td>87.91</td>
</tr>
<tr>
<td>Missing</td>
<td>98</td>
<td>8.17</td>
</tr>
</tbody>
</table>
## Tobacco Chewing

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>4</td>
<td>0.33</td>
</tr>
<tr>
<td>Former</td>
<td>10</td>
<td>0.83</td>
</tr>
<tr>
<td>Never</td>
<td>1000</td>
<td>83.40</td>
</tr>
<tr>
<td>Missing</td>
<td>185</td>
<td>15.43</td>
</tr>
<tr>
<td>Category</td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------</td>
<td>---------</td>
</tr>
<tr>
<td>Current</td>
<td>65</td>
<td>5.42</td>
</tr>
<tr>
<td>Former</td>
<td>23</td>
<td>1.92</td>
</tr>
<tr>
<td>Never</td>
<td>990</td>
<td>82.57</td>
</tr>
<tr>
<td>Missing</td>
<td>121</td>
<td>10.09</td>
</tr>
</tbody>
</table>
Recapping of needles
<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>60</td>
<td>5.00</td>
</tr>
<tr>
<td>No</td>
<td>1002</td>
<td>83.57</td>
</tr>
<tr>
<td>Missing</td>
<td>137</td>
<td>11.43</td>
</tr>
</tbody>
</table>
## Length of Duties

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eight Hours or Less</td>
<td>84</td>
<td>7.01</td>
</tr>
<tr>
<td>9-15 Hours</td>
<td>756</td>
<td>63.05</td>
</tr>
<tr>
<td>16 Hours or More</td>
<td>359</td>
<td>29.94</td>
</tr>
<tr>
<td>Total</td>
<td>1199</td>
<td>100</td>
</tr>
</tbody>
</table>
# Physical violence at work

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>106</td>
<td>8.84</td>
</tr>
<tr>
<td>No</td>
<td>973</td>
<td>81.15</td>
</tr>
<tr>
<td>Missing</td>
<td>120</td>
<td>10.01</td>
</tr>
<tr>
<td>Total</td>
<td>1199</td>
<td>100</td>
</tr>
</tbody>
</table>
(Frequency of reported needle prick)

- >10 times/week: 2%
- 5-10 times/week: 1.83%
- 1-4 times/week: 24.44%
- No prick/week: 67.64%
- Missing: 4.09%
## Comments: Facilities in Workplace

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>OHS for Every Hospital</td>
<td>1043</td>
<td>87</td>
</tr>
<tr>
<td>Sterilization Satisfactory</td>
<td>790</td>
<td>65.9</td>
</tr>
<tr>
<td>Adequate Water Supply</td>
<td>861</td>
<td>71.8</td>
</tr>
<tr>
<td>Soap Always Available</td>
<td>1051</td>
<td>87.7</td>
</tr>
<tr>
<td>Aprons Always Available in OR</td>
<td>897</td>
<td>74.8</td>
</tr>
<tr>
<td>Slippers Always Available</td>
<td>825</td>
<td>68.8</td>
</tr>
<tr>
<td>Masks Always Available in OR</td>
<td>871</td>
<td>72.6</td>
</tr>
<tr>
<td>Eye Protector Always Available</td>
<td>185</td>
<td>15.4</td>
</tr>
</tbody>
</table>
work is boring

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very much</td>
<td>25</td>
<td>2.1</td>
</tr>
<tr>
<td>Much</td>
<td>59</td>
<td>4.9</td>
</tr>
<tr>
<td>Can't say</td>
<td>51</td>
<td>4.3</td>
</tr>
<tr>
<td>Not much</td>
<td>289</td>
<td>24.1</td>
</tr>
<tr>
<td>Not at all</td>
<td>706</td>
<td>58.9</td>
</tr>
</tbody>
</table>
Work is tiring

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very much</td>
<td>109</td>
<td>9.1</td>
</tr>
<tr>
<td>Much</td>
<td>225</td>
<td>18.8</td>
</tr>
<tr>
<td>Can't say</td>
<td>36</td>
<td>3.0</td>
</tr>
<tr>
<td>Not much</td>
<td>478</td>
<td>39.9</td>
</tr>
<tr>
<td>Not at all</td>
<td>263</td>
<td>21.9</td>
</tr>
<tr>
<td>Category</td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>None at all</td>
<td>45</td>
<td>3.8</td>
</tr>
<tr>
<td>Not much</td>
<td>128</td>
<td>10.7</td>
</tr>
<tr>
<td>Can't say</td>
<td>199</td>
<td>16.6</td>
</tr>
<tr>
<td>Some</td>
<td>300</td>
<td>25.0</td>
</tr>
<tr>
<td>Full Autonomy</td>
<td>185</td>
<td>15.4</td>
</tr>
</tbody>
</table>
No Opportunity of Skill Use At Work

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely Agree</td>
<td>55</td>
<td>4.6</td>
</tr>
<tr>
<td>Agree</td>
<td>203</td>
<td>16.9</td>
</tr>
<tr>
<td>Neither Agree Nor</td>
<td>54</td>
<td>4.5</td>
</tr>
<tr>
<td>Disagree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>429</td>
<td>35.8</td>
</tr>
<tr>
<td>Completely Disagree</td>
<td>305</td>
<td>25.4</td>
</tr>
</tbody>
</table>
## Nature of relationship with colleagues

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Bad</td>
<td>7</td>
<td>0.6</td>
</tr>
<tr>
<td>Bad</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Neutral</td>
<td>22</td>
<td>1.8</td>
</tr>
<tr>
<td>Good</td>
<td>605</td>
<td>50.5</td>
</tr>
<tr>
<td>Very good</td>
<td>493</td>
<td>41.1</td>
</tr>
<tr>
<td>Outcome</td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>Common Cold (Rhinitis)</td>
<td>378</td>
<td>31.5</td>
</tr>
<tr>
<td>Low Back Pain</td>
<td>359</td>
<td>29.9</td>
</tr>
<tr>
<td>Cervical Spondylosis</td>
<td>156</td>
<td>13</td>
</tr>
<tr>
<td>Arthritic Diseases</td>
<td>152</td>
<td>12.7</td>
</tr>
</tbody>
</table>
• Prevalence in US of latex allergy estimated to be between 10 – 17%, our prevalence estimate for this population around 12%, similar
Noshioka, 1998

- Brazilian Town, Survey of physicians showed 65-80% prevalence of needle stick injury (at least once in the last 12 months)

- Our prevalence (at least once in the last 12 months) was 24.4%, considerably lower
Paul, 2000

- Dental Health Care Workers at Army Hospital in Riyadh, Saudi Arabia; prevalence of needle stick injuries: 58%
- Higher than in our sample, 24.4%
Scoular, 2000- Survey of the opinion of healthcare workers in Scotland

- The perceived susceptibility to blood borne infections in Scotland was 34%,
- In our survey, we found that between 78 and 85%, considerably higher
Lum, 1997- New Zealand

• Survey estimated incidence of needle stick injury among general practitioners, 22 per 100 workers in 6 month time period.
• Similar to prevalence estimate of 24.4% in the present study.
Conclusions

• India is rapidly industrializing and attaining prosperity despite widespread poverty,
• Identification of Occupational illness and reporting is still unsatisfactory,
• Following training health care workers adopted safe work practices,
• Academic occupational medicine is now alluring to medical graduates
Smedley, 1995

- System wide prevalence of needle stick injury among health care workers in Oxford and Wessex, UK, prevalence of needle stick injury varied from 9 to 44%.
- Similar to prevalence estimates in the present study but range is wide.
“India is the cradle of the human race, the birthplace of human speech, the mother of history, the grandmother of legend, and the great grandmother of tradition. Our most valuable and most instructive materials in the history of man are treasured up in India”.

Mark Twain

“Despite this, the skepticism of most Indians, who have inherited from the British a talent for cultivated cynicism, is most surprising.”

Chris Wood, CLSA

Growth enablers

Growth solidifiers & accelerators

9 -11 % future growth a reality

Growth and Indian stock markets