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Down to Earth

To
The Editor
Down To Earth

Dear Ms Sunita Narain,

I found your article on the endosulphan very comprehensive and well investigated. Since you mentioned the visit of Mr Ganesan to CHC I would like to add something more from that interaction. The conversation was basically around the industries concern about the 'misinformed activists' campaign against endosulphan, which was a 'relatively safe pesticide alternative' today. As a health training and policy action group committed to community health concerns and action initiatives, I informed him that we were neither anti-industry or anti-pesticide per se but pro people's health and our concerns and interests were around 'evidence' of dangers to community health of any nature. Also as an Occupational Health consultant I have been interested in this issue ever since I did a large ICMR study on Occupational Health hazards of tea plantation workers including pesticide hazard.
I requested him to provide us with all the information the association/industry had about endosulphan, which he promptly gave me in a note with questions and answers on endosulphan.

Over the last few months two of our younger team members Dr Anur Praveen and Dr Rajkumar Natarajan have done a detailed literature review. I am sending this to you as our commitment to public education so that your readers can decide whether this is ignorance of an industry or a deliberate misinformation campaign.
At the end of last month we facilitated a very interesting three day Community Health Environment Skill Share (CHESS), where over 100 professionals and activists gathered from all over the country to share their concerns about pesticides, mines, industrial hazards and other environmental hazards and explore ways and means of studying them and collecting health evidence. We had the unique privilege of a presentation by Dr Sayed, Director of National Institute of Occupational Health who summarised the findings of their study on endosulphan in Kasargod, which has been submitted to the National Human Rights Commission. The findings not only substantiate the literature review we have compiled in CHC but is a sound, scientific, evidence based contribution to the controversy. As a contribution to people's science I think Down To Earth should formally write to NHRC and NIOH (on behalf of your readers and the affected victims of the endosulfan disaster) to release this report and make it a public document to support the right of information.
ICMR ethical guidelines published last year clearly states that one of the ethical principles are

(X) added

Regards,

Dr Ravi Narayan
Community Health Cell Adviser, CHC, Bangalore
sochara@vsnl.com

RKN – Laserjet printout for Dr Sayed urgent
Ravi
CHESS-II file →

RN
4/9/02

- Action taken - print taken
RKN - 4/9/02

CHESS-II file
→
RN
6/9

INDUSTRY VERSUS SCIENCE – IGNORANCE OR MISINFORMATION

Compiled by Dr Anur Praveen and Dr Rajkumar Natarajan (CHC)

Questions	Answers (What the Industry provided us*)	What we have to say..... (The actual facts)
What is Endosulfan?	Endosulfan is a popular insecticide used worldwide in more than 60 countries including USA, Japan, many European and Asian countries. It is recommended for control of insect pests in a variety of field and plantation crops such as Cotton, Vegetables, Wheat, Paddy, Mango, Cashew, Tobacco, Coffee, Tea, Sugarcane, Spices, etc., Agricultural scientists call Endosulfan as a "selective insecticide" as it has a very low toxicity towards beneficial insects such as honeybees and insect predators/parasites and crop pests. It is therefore considered to be the most ideal insecticide for use in IPM (Integrated Pest Management) systems. * Note provided by Mr Ganesan of Pesticide Manufacturers Association	- Endosulphan is an organochlorine pesticide belonging to the same family (cylodiene sub group) as Aldrin, Endrin, Dieldrin, Heptachlor, Chlordane and Mirex all of which are Persistent Organic Pollutants (POPs) and banned by the International POPs Convention Treaty. (Quijano. R. F., International Journal of Occupational Health, 2000) - Endosulfan itself is banned in Germany, Singapore, Norway, Sweden and Belize. Its use in rice fields is not allowed in Bangladesh, Indonesia, Korea and Thailand. - Its use is severely restricted in USA, UK, Japan, Russia, Australia, Great Britain, Finland, Netherlands, Denmark, Sri lanka, Thailand, and Kuwait. (Hoeshest, 1991; IRPTC, 1993; PRC, 1994) - Latest data reveal it is highly toxic to bees, aquatic animals and other wildlife. It is moderately to highly toxic according to scale of Hodge and Sterner(1956). - It is easily absorbed in the body following ingestion, inhalation and skin contact. (IPCS, WHO-EHC 40, 1984.) - There is no authority or reference quoting endosulfan as a selective or ideal insecticide. - Acute intoxication or systemic toxicity causes neurological manifestaitions like irritability, restlessness, muscular twithieng, seizures, cyanosis, pulmonary oedema and death. (IPCS, WHO-EHC 40, 1984 and Gosselin. R. Et al, Toxicoloogy of

Commerical Products, 1984.)

2. Does endosulfan belong to the insecticide group ' Chlorinated Hydorcarbons" similar to DDT?	No. Insecticides of Organo chlorine group contain mainly the elements Carbon, Hydrogen and Chlorine. Whereas, Endosulfan additionally contains oxygen and sulphur in a functional sulphite group. Hence, in 1986, WHO reclassified Endosulfan as sulfurous ester of a chlorinated cyclic diol. In hc handbook of International Union of Pure and Applied Chemistry (IUPAC), Endosulfan is designated as sulphite.	Endosulfan is a Persistent Organic Pollutant belonging to the organocholrine group and cyclodiene sub group. It belongs to the same family as Aldrin, Endrin, Dieldrin, Heptachlor, Chlordane and Mirex all of which are Persistent Organic Pollutants (POPs) and banned by the International POPs Convention Treaty. (Quijano. R. F., International Journal of Occupational Health, 2000) Although endosulfan is classified as sulphurous acid ester of chlorinated cyclic diol by WHO, it is still an organochlorine and its degenerated product endosulfan sulfate is very persistent and as toxic as the parent compound.(ASTDR, US Dept of health & human Services, 1993)
3. How does WHO rank endosulfan for its toxicity?	The UN body WHO has classify pesticides as follolw. Class Ia : Extemely Hazardous Class 1b : Highly Hazardous Class II : Moderately Hazardous Class III : Slightly Hazardous Endosulfan comes under the Class II "Moderately Hazardous" pesticide.	WHO basis for Class II (moderately hazardous) is based on LD 50 value taken from company generated* acute toxicity rate . (Quijano. R. F., International Journal of Occupational Health, 2000) **This data was challenged because the lab that did theses tests was charged with fraudulent practice.* In India, endosulfan is classified as an **"extremely hazardous"** pesticide (ITRC, 1989) According to USEPA, endosulfan is classificd as **"extremely hazardous"** - class I b (US Environmental Protection Agency, Consolidated Chemicals List, 2nd February, 1990) EXTONET classified it as a highly toxic chemical. (European union, 1998)

4. What is the fate of endosulfan in the environment? & 5. Is use of endosulfan safe for man and environment?	Degradation and dissipation of Endosulfan is rather fast from all compartments of the environment (soil, water, air and organisms). In Indian conditions, dissipation of total Endosulfan residues occurs to the extent of 95% within 28 days after application. On most fruits and vegetables 50% of Endosulfan residues is lost within 3-7 days after application. In soil, it is degraded by microorganisms. It is practically insoluble in water. The half line of Endosulfan in water is estimated to be 4 days. At the recommended rate/s and method/s of application, Endosulfan is safe to man and environment and is unlikely to lead to any user or public health problems. Studies and reviews by WHO/FAO and US show that Endosulfan does not have carcinogenic/mutagenic /teratogenic effects. Endosulfan does not cause endocrine disruption. Endosulfan enjoys good user safety record, though used in a variety of situations worldwide.	**Fate in Environment-** In soil- The time taken for the concentration of endosulfan sulfate to reduce to half its concentration in soil is 60- 800 days (Stewart and Cairns, Journal of Agricultural Food Chemicals, 1974) Endosulfan was found in soil after 3 years of usage. (Rao DMR, Murthy AS, Journal of Agricultural Food Chemicals, 1974) Concentration of endosulfan in sediment is 32,000 times greater than in the water column.(NRCC,1975) In water- The time taken for the concentration of endosulfan to reduce to half its concentration in water in 3-days – 5 months depending upon pH of water, 0_2 (dissolved in water) and pollution in water. (NRCC, 1975) Endosulfan has been found in groundwater at deep soil layers upto 20 days after spraying. (Paningbatan EP et al, The Phillipine Agriculturist, 1991.) Endosulfan is lethal to fish, even at acceptable levels in water bodies. (IPCS, WHO-EHC 40, 1984) In air- Endosulfan has been carried over long distances and found in air and snow samples in Arctic regions. (Gregor and Grummer, 1989) Endosulfan bioaccumulates in aquatic species like fishes, (Naquvi SM, Vaishnavi C, Comp Biochem Physiol C, 1993; Fernandez Casalderrey A, et al, Comp Biochem Physiol C, 1991; IPCS, WHO-EHC 40, 1984) Kingfishers that fed on fish which were killed or incapacitated by endosulfan aerial spray died. (Douthwaite, 1982)

Endosulfan and its residues have been found in foods like vegetables, crops and infant foods. (Pordrebarac DS, 1984, Bureau of Plant Industry Phillipines, 1995)

Safety of endosulfan for man and environment-

No chemical pesticide is completely safe!! There has been no studies on to prove the toxicity of endosulphan as it is ethically and legally not permissible to perform tests on humans with pesticides. However, sufficient proof is available on the mutagenic , carcinogenic, teratogenic and geno toxic effects on animals. Naturally, these studies are used to predict the possible effects on human beings.

Endocrine disruption-

Endosulfan has reproductive and endocrine disrutping effects leading to reproductive toxicity and changes in reproductive organs. (Soto A, Colborn. T, Van Saal F. S., Environmental Health Perspectives, 1994)

Mutagenicity (Cancer causing)

A 1992 study concluded that endoulfan could act as a tumour promoter. (Fransson-Steen R, et al, Carcinogenesis, 1992)
It has produced high rates of lymphosarcoma (cancer of lymph nodes)(Industrial Biotest, 1965)

Genetic defects (genotoxicity)

Endosulfan has caused damaged to genes, chromosomes and cell cycle kinetics. (Yaquan Lu, et al, Environmental Health Perspectives, 2000; ASTDR, 1993)

Birth defects

Low birth weight and adverse behavioral

		effects have been noted on the offspring of exposed rats. Endosulfan may produce both maternal and developmental toxicity in humans. (ASTDR, 1993) **Nervous system:** Acute intoxication or systemic toxicity causes neurological manifestations like irritability, restlessness, muscular twitching, seizures. Long term effects of exposure to endosulfan have caused seizures and mental retardation. (ASTDR, 1993) **Immunotoxicity-** This is the most sensitive endpoint of endosulfan toxcity and humans are at risk of adverse immune effects. . (ASTDR, 1993) **In environment-** Endosulfan is lethal to fish, even at acceptable levels in both fresh water and sea water. (IPCS, WHO-EHC 40, 1984) Endosulfan has been proven toxic for terrestrial birds and organisms like beetles, mallards, kingfishers. (IPCS, WHO –EHC 40,1984, Hudson et al, 1972) The National Wildlife Federation US states that endosulfan is extremely toxic to wildlife and acutely toxic to bees. (NWF, 1987) The Danish government has classified endosulfan as acutely toxic to birds. (Hanson OC, Ecotoxicological Evaluation of Endosulfan, 1993) Toxicity of endosulfan in roots and leaves have been reported. (IPCS, WHO-EHC 40, 1984)

WHOEHC: World Health organization Environmental Health Criteria
IPCS: International Program on Chemical Safety
ATSDR: Agency for Toxic Substances and Disease Register, Atlanta
ITRC: Industrial Toxicology Research Centre

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CHESS prep-work discussion paper

DOCUMENT INPUT:

1. BROCHURE:
   - Summary of CHESS-1
   - List of Participants :CHESS-1
   - List of Participants: CHESS-2
   - Profiles of all organizations participating in CHESS-2
   - Background Papers from key resource people
   - ~~Expected Outcomes~~ Wishlist- Process to prioritise
   - Agenda of CHESS-2
2. MANUAL ON LAY EPIDEMIOLOGY
   Prepared by Community Health Cell, Bangalore.
3. POISON FREE EARTH- A CD Compilation of all toxics-health literature.
   Prepared by Greenpeace India for public use.
4. ELOOR TRI REPORT
   Prepared by Greenpeace India as part of the RTK/Health campaign
5. REPORT-DOCTOR-INTEREST MATERIAL
6. REPORT-CONSUMER INTEREST MATERIAL

PROPOSED AGENDA:

DAY ONE: 26/7/2002:

9 am- 10am: Registration and Tea.
10am to 1:30 pm: Sharing in large/small groups of the work of individuals and groups.
1:30 to 2:30pm: Lunch
2:30 to 4:30pm: Lay Epidemiology: one day skillshare: Elizabeth Guillette and Community Health Cell: Session 1
4:30 to 5:00 pm Tea
5:00 to 6:30pm Lay Epidemiology: Session 2
7pm: Cultural Evening: Welcome Dinner.

DAY TWO: 27/7/2002:

9am-10:30am: Lay Epidemiology: Session 3:
10:30-11:00am: Tea
11:00 to 1:30pm: Final Session of Lay Epidemiology
1:30 to 2:30pm: Lunch
2:30 to 4:30pm: A short summary of the CHESS-1 and the ideas that emerged over the year.
Campaign Ideas Presentations

4:30 to 5:00pm: Tea and snacks.
5:00 to 6:30pm: Campaign Session -2:
Small Groups interactions cum brainstorming on Toxics and Health Issues with:
---- A National Platform for Radiation survivors.
---- Legal action to address Corporate Liability?
---- Womens' Health issues in hotspots
---- A Consumer Campaign(???)
---- Worker Health Remediation/Liability
---- Community Health Surveys
---- Pesticides and Health
---- Media as part of the Campaign.
---- And any other issues of concern...

The Format: One resource person presents a discussion paper to provoke people into a discussion/debate. The process is documented by the resource person to gather a complete picture of what everyone wants to campaign on.

7:00pm onwards: Fringe meetings- 'building bridges'!!!

DAY THREE: 28/7/2002

9 am-10:30 am: Campaign Session-3: Small groups come in the larger forum. Sharing of insights into the national campaigns.
10:30-11:00 am: Tea
11:00 - 1:30 am: Campaign Session 4: Debate and Discus sion on the Statement of Collective Concern.

1:30 -2:30pm: Lunch
2:30 - 3:30 pm: Final Plans for the 2nd year of the cam paign.
3:30 - 4:00 pm: Discussion on Budget and Resource- raising
4:00- 4:30 pm: Individuals and Organisations taking key responsibilities.
4:30- 5:00 pm: Tea and Snacks
5:00 to 5:30pm: Travel to the City Centre.
5:30 to 7:00 pm: Public Activity and Press Briefing.(Release the statement of collective concern)

THINGS TO DO BEFORE THE EVENT:

1. Prepare an exhaustive List of Invitees—Manu, Bidhan
2. Contact/Meet them.—Bidhan
3. Prepare first draft of brochure: by june 15th —Sanju
4. Complete Brochure out by July 1st.— Sanju

5. Make a list of resource persons.—Manu
6. Contact and Meet them.— Manu
7. Prepare discussion papers on various sub-issues.—Nity(??)/ Manu
8. Participants to bring existing indigenous research of their on to feed into PFE..Bidhan
9. Venue and Travel Logistics - Nimi
10. Budget and Funding— Ananth +any volunteers from the prepteam
11. Full Set of Documents for CHESS-2: by July 10th: Sanju
12. Consultations with CHESS-1 team at all stages.—Manu
13. Media Interphase: .....
14. Public Activity : Manu
15. Draft Statement of Collective Concern: Nity(???), Dr.Ravi(???), Ananth(???), Jayan(???), Manu
16. Fund Raising: The CHESS planning group and any other organisations& individuals

PROPOSED LIST OF RESOURCE PERSONS/ Invitees with issue focus:

Pesticides and Health:

- Dr. Elizabeth Guillette
- S. Usha
- Jayakumar C.

Psychological/ Neurological Health: →

- Dr. Mohan Isaac,NIMHANS

A National Radiation Campaign:

- Achin Vanaik
- Praful Bidwai

Womens' Health

- Dr.Thelma Narayan

Worker Health and Liability:

- Babu Mathew
- Ganguly-CITU
- Vijay Kanhere is a labour activist who has worked for the compensation of workers in industry.
  Email: sujvij@vsnl.com

Media Campaign:

- P. Sainath
- Darryl D'Monte,Corpwatch-India
- Nityanand Jayaraman
- Dr. Unnikrishnan, OXFAM

Consumer Action:

- Bejon Mishra

Lay Epidemiology:

- Dr. Ravi Narayan
- Dr. Thelma Narayan
- Dr. Murlidhar
- Dr. Veena Murlidhar

Legal Action:

- Colin Gonzalves, India Centre for Human Rights and Law.
- Deepika, Human rights law network.
- Prashant Bhushan, Supreme Court Lawyer.
- Justice Kuldip Singh(???)

PROPOSED LIST OF PARTICIANTS: (being updated)

EXPECTED PARTICIPATION:

• ~~Doctors~~: Health Profession	15
• Lawyers:	5
• Consumer Associations:	5
• Activists:	35
• Survivors (affected communities):	15
• Trade Unions and Workers:	5
• Youth groups:	5
TOTAL:	85

Health Professionals

Doctors:

Dr. Praveen Anur is an intern from Kempegouda Institute of Medical Sciences, Bangalore who was a special volunteer with CHC during his Community Medicine posting and was primarily responsible for all communications and facilitation of organisational dimensions of CHESS-1.

Email: anurpraveen@hotmail.com

Lalit Narayan is a first year medical student at St. John's Medical College, Bangalore who has been interested in environmental issues right from high school.
Email: lalit_n@hotmail.com

Dr. Rajan Patil is an epidemiologist and is presently a Research/ Training Assistant in CHC with a special interest in vector bourne diseases. He has been involved with creating an interactive science teaching module on mosquitoes and their control.
Email: rajanpatil@yahoo.com

Dr. Girish Rao
Dr. Girish Rao is an Associate Professor of Community Medicine in M.S. Ramaiah Medical College, Bangalore with a longstanding interest in all aspects of hospital waste management. He is also an Associate of CHC.
Address: Faculty of Community Medicine, M.S. Ramaiah College, MSRIT Post, Bangalore- 560 054
Phone: 080-3600968
Email: girishrao@hotmail.com

Dr. Sukanya, Achyutha Menon Center for Public Health, Trivandrum.

Dr. T. Venkatesh
Dr. Venkatesh is the Professor of Biochemistry at St. John's Medical College and the Director of 'Project Lead Free' of the George Foundation. He is also the head of the National Referral Centre for Lead Poisoning in India.
Address: Department of Biochemistry and Biophysics, St. John's Medical College, Bangalore- 560 034
Phone: 080-5532146/ 2065058
Telefax: 080-6640293
Email: venky_tv@hotmail.com

Dr. Murlidhar V is a Mumbai based doctor with experience and interest in community health surveys and environmental health issues.
E mail: murlidharv@vsnl.com

Dr. Veena Murlidhar is a medical officer with Navi Mumbai Municipal Corporation. Her work involves control/ surveillance of epidemic diseases and campaigns such as Polio Eradication.
Email: murlidharv@vsnl.com

Dr.Rakhal Gaitonde and Dr.Subhasri Gaitonde
Dr. Rakhal is doing his post graduation in Community Medicine in CMC, Vellore. He has a special interest in peoples movements and using epidemiological skills in activism. Dr.Subhashri is an obstretician and gynaecologist in CMC, Vellore.
Address: 636-B, PG Quarters, CHAD, Bagayam, Vellore
Phone: 0416-260988
Email: subharakhal@yahoo.com

Sachin D'souza
Sachin is a final year medical student at St. John's Medical College, Bangalore
Address: 203-F, Ranka Plaza, 157, Wheeler Road, Frazer Town, Bangalore- 560 005
Phone: 080-5090150
Email: mustardjuice@postmark.net

Dr. Ravi Narayan is the Community Health Advisor of CHC with professional interest and training in public health, industrial health and preventive and social medicine. Earlier as an Associate Professor of Community Health at St. John's Medical College he worked on occupational hazards of the tea industry and the health effects of agricultural development.
Email: tnarayan@vsnl.com

? **Dr. Thelma Narayan** is the present coordinator of CHC. She is an epidemiologist with a doctorate in public health policy. She has been involved as a resource person for studies on the Bhopal health disaster and is currently a member of the Karnataka Government Task Force on Health and Family Welfare.
Email: tnarayan@vsnl.com

Dr. Biju, Dr. Nandakumar from the Karimugal Carbon Black factory, Cochin.
Dr Sripathi, Dr Mohan Kumar -

Trade Unionists/ Labour Activists/Workers:

Vijay Kanhere is a labour activist who has worked for the compensation of workers in industry.
Email: sujvij@vsnl.com

S.A. Mahindrababu and **K. Gopalakrishnan** are members of the Ex Mercury Employees Association and are fighting for cleanup of the mercury and better compensation for the workers in Kodai.

Daniel Francis is a machine orperator in the Mercury Thermometer Plant of Hindustan Lever Ltd. in Kodaikanal.

Mohan, Trade Union Movement Researcher, Bangalore.

Consumer Associations:

✓ **Bejon Mishra,** Consumer Voice, New Delhi

Jairaj
Bharat, Consumer Action Group, Chennai.

← **Janki Shah**, Bangalore.

Nizam - Fedcot

Activists and Individuals:

Usha S. is involved in environmental education among students and studies and campaigns among farming communities on chemicals in agriculture. thanal@vsnl.com

Sridhar R. is involved in campaigns against industrial pollution in Eloor and Mavoor in Kerala. He is also involved in the issue of waste management and has worked on the socio-economic impacts of the newsprint and pulp industries. thanal@vsnl.com

Rajasree V.V. is involved in Thanal's activities on pollution and toxicity and is specifically working on hospital waste management. thanal@vsnl.com

Jayakumar C. is the coordinator of Thanal Conservation Action and Information Network. thanal@vsnl.com

Anand Mazgaonkar and **Swati Desai**'s work involves trying to mobilize affected communities along a 200km stretch from Vapi to Mehsana in Gujarat on issues of ground and surface water contamination, hazardous solid waste, air pollution, health effects and TNCs.
pss@narmada.net.in

Michael Mazgaonkar, Paryavaran Suraksha Samiti, PSS, Gujarat.
pss@narmada.net.in

Mahalakshmi Parthasarathy is working with mining struggle sroups. She is also involved with legal and media advocacy and information documentation.
Email: pmahalakshmi@yahoo.com

V.T. Padmanabhan is currently studing the genetic effects of natural biological radiation in villages in Kerala. sambhavana@vsnl.com

Bharati Chaturvedi, coordinator of Chintan Environmental Research and Action Group.

Kanan, Palani Hills conservation Council, Kodaikanal. Email: kanan@vsnl.com

Vishnu Kamath, Citizens for Alternatives to Nuclear energy (CANE), Bangalore.

Xavier Dias, Mines, Minerals and People.

AS Mohammed (SJANMS)

Health ← References
↓
+ Venkatesh
Raj Mohan
Krishnamurthy
Abhay Shukla
Shashikala – CH Dept St Marthas Hospital

AS Mohammed is the Asst. Professor of statistics and demography in the Department of Community Medicine, St. John's Medical College and has been involved in numerous studies and reports on health care and evaluation. He is a society member of CHC.
Address: Department of Community Health, St. John's Medical College, Bangalore- 560 034
Phone: 080-2065043
Email: aa.sjmc@vsnl.com

Rajesh Rangarajan, Toxics Link Chennai, Chennai. tlchennai@vsnl.net

Madhumita Dutta, Toxics Link Delhi, New Delhi. mdutta@vsnl.com

Nityanand Jayaraman
Nityanand is an independent journalist working on toxic issues for over 5 years.
Address: 218, 6th Main, 6th Cross, Rajarajeshwari Nagar, Bangalore-560 098
Phone: 080-8601033
E mail: nity68@vsnl.com

Ananthapadmanabhan
Ananth is the Executive Director of Greenpeace India. He ahs been teaching before for 11 years and then he spent a few years in the Environment Division of a leading finantial institution.
Email: ananth@dialb.greenpeace.org

Sanjeev Gopal
Sanjeev is currently a trainee campaigner with Greenpeace India.
Email: sanjeev.gopal@dialb.greenpeace.org

Divya Raghunandan
Divya is a trainee campaigner with Greenpeace India.
Email: divya.raghunandan@dialb.greenpeace.org

Bidhan Chandra Singh
Bidhan is a trainee campaigner with Greenpeace India. Email: bidhan.chandra.singh@dialb.greenpeace.org

Nirmala Karunan
Nirmala is the Administration Manager.
Email: nirmala.karunan@dialb.greenpeace.org

Survivors (affected communities):

VV Purushan, Periyar Malineekarana Virudha Samithi, a community based organization involved in pollution prevention through direct actions in Eloor, the largest industrial estate in Kerala. Email:

VJ Jose, Ernakulam Rural Action Force and active volunteer of Greenpeace-India.
Involved in mobilizing the local community using education material and films from the Greenpeace library. He has also been instrumental in environmental monitoring of the river Periyar.

Lawyers:

- **Colin Gonzalves, India Centre for Human Rights and Law.**
- **Deepika, Human rights law network.**
- **Prashant Bhushan, Supreme Court Lawyer.**
- **Justice Kuldip Singh(???)**

LIST OF PARTICIPATING ORGANISATIONS
(a proposal)

1. **Chintan Environmental Research and Action Group, Delhi**
   Represented by Bharathi Chaturvedi
   Chintan is a Delhi based NGO working on environmental issues, particularly waste and toxics.
   Address: No. 17, Jangpura Market, 2nd floor, above Om Hotel, New Delhi 110 013
   Phone: 011-3381627/ 4314478
2. **Periyar Malineekarana Virudha Samiti,Kerala**
   PMVS is a local group of activists fighting the pollution issue in the Eloor and Edayar belts of the River Periyar, where there are about 250 industries of all sorts mainly chemical.
   Address: Periyar Malineekarana Virdha Samiti, Eloor Depot, Udyogmandal P.O., Kochi, Kerala.
   Phone: 98460-13483
   E-mail: thanal@vsnl.com
3. **Endosulfan Spray Protest Action Commitee, Kerala**
   ESPAC was formed at Perla, Kasergod by local farmers and the affected people to fight the aerial spraying of endosulfan and they have been very sucessful in bringing this issue to a larger media and people's attention.
   Address: c/o Kajampady Nursing Home, P.O. Perla-671 552, Kasargod District, Kerala
   Phone: 895088

E-mail: shreepadre@sancharnet.in

4. **Palni Hills Conservation Council**

Represented by Kanan.
A NGO based in Kodaikanal fighting for the cause of workers affected in Mercury factory of HLL.
Email: kanan@vsnl.com

5. **Sambhavna**

Represented by V.T. Padmanabhan
Sambhavna is a Bhopal based voluntary organisation engaged in delivering holistic medical services to gas affected people. It has undertaken several pioneering initiatives in the field of community health, particularly in the context of communities affected by industrial pollution.
Address: Sambhavana, Berasia Road, Bhopal
Email: sambavna@bom6.vsnl.net.in

6. **Mines, Minerals and People(MMP)**

Represented by Mahalakshmi Parthasarathy
MMP is a national network of mining- affected communities and community groups and working with mining affected communities in any manner.
Address: 1249/A, Road No. 62, Jubilee Hills, Hyderabad- 500 033
Phone: 040-6505974
Telefax: 040-3542975
Email: mm_p@satyam.net.in

7. **Citizens for Alternatives to Nuclear energy (CANE), Bangalore**

Represented by Kavitha B.S.
CANE is a Bangalore based NGO working aganist radioactive pollution.
Address: #390, 5th main, 12th cross, West of Chord Road, 2nd stage, Mahalakshmipura, Bangalore-560 086
Phone:080-3592059/ 3592060
E mail: kavayathri@yahoo.com , aravinda@cisco.com

8. **Paryavaran Suraksha Samiti, Gujarat**

Represented by Anand Mazgaonkar and Swati Desai.
PSS is a voluntary self help organisation working primarily in South Gujarat on a variety of issues, including Industrial Pollution and Right To Know.
Address: 37/1, Narayan Nagar, Chandni Chowk, Rajpipla-393145, Gujarat
Phone: 02640-20629
Email: pss@narmada.net.in

9. **Thanal Conservation Action and Information Network, Thiruvananthapuram:**

Represented by Usha S., Sridhar R. and Rajasree V.V.
Thanal is a community oriented organisation working on conservation issues and toxic related issues. Currently engaged in a community Right to Know campaign in Eloor, Kerala and a proposal to move Kovalam toward a zero waste model.
Address: Post Box No: 815, Kawdiar, Thiruvanthapuram, 695 003, Kerala
Phone: 0471- 311896

Email: thanal@md4.vsnl.net.in , shreepadre@sancharnet.in

10. **Toxics Link,Chennai**
Represented by Rajesh Rangarajan
Address: 8, 4th Street, Venkateshwara Adayar, Chennai- 600 020
Phone: 044-4460387
Telefax: 044-4914358
Email: tlchennai@vsnl.net

11. **Occupational Health and Safety Centre, Mumbai**
Represented by Vijay Kanhere, Dr. Murlidhar V. and Dr.Veena Murlidhar.
Address: 6, Neelkant Apartments, Gokuldas Pasta Road, Dadar(E), Mumbai-400 014
Phone: 022-766 0178
Email: webmaster@ohscmumbai.org
Website: www.ohscmumbai.org

12. **Community Health Cell, Bangalore**
Represented by Dr. Ravi Narayan, Dr. Thelma Narayan, Dr. Rajan Patil, Dr. Praveen Anur and ~~Lalit Narayan.~~
CHC is volulntary health organisation and community health resource and policy centre working closely with the governments and communities to improve health and access to health care. Also involved in training health workers to empower communities at grass root level.
Address: 367, Jakkasandra 1st Main, 1st Block, Koramangala, Bangalore-560 034
Phone: 080-5531518/ 5525372
Telefax: 080-5525372
Email: sochara@vsnl.com

12. **Greenpeace India**
Represented by Nirmala Karunan, Manu Gopalan, Navroz Mody, Ananthapadmanabhan, Dvya Raghunandan, Bidhan Chandra Singh.
Address: J- 15, Saket, New Delhi- 110 017
Phone: 011-6962932/ 6536716
Telefax: 011-6563716
email: manu.gopalan@dialb.greenpeace.org

13. **Consumer Voice**
F-71,Lajpat Nagar-II, New Delhi-110024
ph:011-6918969,011-6315375
fax:011-4620455
Bejon Misra: 9811044424
email:bejonm@hotmail.com

14. **Consumer Action Group**
Represented by Bharat Jaiaraj.
No.7, 4th Street, Venkateshwara Nagar, Adyar, Chennai-600020.

15. **Samvada,** 303, II Floor,Rams Infantry Manor, Infantry Road, Bangalore.
Ph:080-5580585
Represented by Anita Ratnam, Benson Isaac.

16.Human Rights Law Network,
Represented by Deepika D'souza, Colin Gonzalves.
Engineer House, 4 Floor, 86,Bombay Samachar MArg, Mumbai-400023.
Ph: 022-2217078/2204948
Fax:022-2220822/2227233

17.Alternative Law Forum, Infantry Road, Bangalore.
Represented by Chitra.

18. Indian Ocean, New Delhi.
Represented by Rahul Ram.

19. Association of Consumer Action on Safety and Health(ACASH), Mumbai.
Servants of India Society, SVP Road, Gurgaum, Mumbai.
Ph: 022-3886556

20. AIIMS National Poison Information Cell.
Dr.SD Seth. Ph: off:011-6512880;hom:011-6593282;fax:011-6859391

21. The Goa Foundation, Above Mapusa Clinic, Mapusa-403507 Goa.
Claude Alvares

22.The Centre for Science and Environment,41, Tughlakabad Institutional Area, New Delhi-110062.
Ph: 011-6081110,011-6083699,fax:011-6085879
email:cse@sdalt.ernet.in
Nidhi Jamwal

23.Center for Indian Trade Unions:198,N Avenue, New Delhi-110001.
PK Ganguly
email: pkg@mail-me.com,citu@vsnl.com
phone: 011-3221288/1306
fax: 011-3221284/3794230

24. CEC, 173 A, Khirki Village, Malviya Nagar.
J John
Phone: 011-6686841,011-6671858.(o) 011-6688455
email:jjohn@vsnl.com

25.Development Alternatives,
B-32,Qutab Institutional Area, New Delhi-110 016
Ashok Khosla
Phone: 011-6851158

Fax:011-6866031

26.India Centre for Human Rights and Law,
5th Floor, CVOD JAin School, 84,Samuel Street, Dongri, Mumbai-400009.
Ph: 022-3702592/3790699
Deepika D'souza.

27.Hind Mazdoor Sabha,125, Babar Road, New Delhi-110001
Umrahomal Purohit
Ph:011-3413519
Fax:011-3411037

28.Humanscape,11,Yogniti,18,SV Road, Santacruz(W), Mumbai-400054
Phone:022-6106197
022-6119513

29. Himal, Himal South Asia, GPO BOx:7251, Kathmandu, Nepal.
Email: thomasm@himalmag.com

30.ICRA, Bangalore.
Email: icra@bgl.vsnl.net.in
icr@vsnl.com

31.Living on the Edge.
Ph:011-6180952/53
Fax:011-6189130
Monica/Nandini

32. Pallikkoodam School, Vadarathoor PO, Kottayam-686010
Ph:-0481-578123
0481-570576
Email: pallikoodam@yahoo.com
Mary Roy.

33.Himal Association,
PO Box:166, Patan Dhoka, Lalitpur,Kathmandu,Nepal
Ph:433100,542544.
Mohan Mainali

34.PIRG,
Ph:011-2432054
Fax:011-2224233
Kawaljit Singh

35.PSI,
252/1, Vasanth Vihar Enclave, Dehradun,-248006, UP.

Ph:0135-763649,0135-773849.

36.PUCL, 32,Kachaleeswarar Agraharam St. Off., Armenian Street, Chennai-600001.
phone: 044-5233639,
fax:044-524541
email:counsels@vsnl.net

37.Pravah,15/10(2nd Floor)Kalkaji,New Delhi-110019
Tel:011-6440619
email:pravah@ndf.vsnl.net.in

38. Bandhua Mukti Morcha, 7, Jantar Mantar Marg, New Delhi-110001
Phone:011-3366765/3367943
Fax:011-3368355
Swami Agnivesh

39.VHAI, 40, Institutional Area, Tong Swasthya Bhavan, Near Qutab Hotel, New Delhi-110016.
Ph:011-6518071/72
Fax:011-6853708

40.The School, KFI, Chennai.
Sumitra, Arun.

Proposed Budget for CHESS-2 Preparation, Event and Follow-up

	Head	Expand	Cost	Who Pays?	1--Shared	2--GP
1	Travel (resource people meetings)	8 meetings	40,000	2	0	40000
1	Travel (Meetings with Participants)		25,000	2	0	25000
3	Brochure	80 pages X 100 copies (printed, xerox, spiral bound)	10,000	2	0	10000
3	Manual of lay epidemology	80 pages X 100 copies (printed, xero x, spiral bound)	10,000	1	10000	0
3	Reports (Doctors, Consumers)	40 pages X 2 Reports X 100 copies (slick)	20,000	2	0	20000
3	Poison free earth (reproduction costs)	Rs. 90/CD*100 copies	9,000	2	9000	0
3	Skill share proceedings document	80 pages X 100 copies (printed, xerox, spiral bound)	10,000	2	0	10000
4	Venue + food	100 peopleX 5 daysX Rs. 500	175,000	1	175000	0
4	Transport	6 minivan trips @2500/trip	15,000	1	15000	0
4	Public Activity		15,000	1	15000	0
4	Travel support (if necessary)	Rs. 1000 X 30	30,000	2	0	30000
4	Travel Support for resource people		20,000	1	20000	0
4	Stationary & banners etc	Rs.75/person *100 people	7,500	2	0	7500
4	Meeting T-shirt	Rs. 70/shirt *100 people				
7,000	2	0 7000				
4	Elizabeth Guillette Travel		$2,500/ 125,000	2	0	125000
6	Media Interphase		25,000	2	0	25000

7	Manpower costs (1 travelling campaigner)			20,000	2	0	20000
	Budgets and Funding			Total costs	who pays?	shared	GP
			INR				
	Preperation						
	TRI (Eloor)	3000 pages X 10 copies					
2	0	0					
	TOTAL			488,500		235,000	253,500
8	***Contingency***			48,850			
			Cost per head				
2350							
	Grand total						
537,350							

Delegate Fee	500
number of paying delegates	60
Income from delegate fee	30000
From GP	253,500
From Direct Fundraising:	**253,850**

Kasargod

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G

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CHESS £ 8A. 7.

team,
Just an instance of the many ways in which health surveys help campaigns...
cheers,
manu
------- Start of forwarded message -------
From: davey garland <thunderelf@yahoo.co.uk>

Subject: [DU-WATCH] Unique health survey implicates Hinkley Nuke power station
Date: 7/14/2002 12:18:17 AM

Unique health survey implicates Hinkley

A group of committed parents has conducted a unique doorstep survey of its own community and discovered appalling levels of cancer just five miles from Hinkley Point nuclear power station. A report analysing the responses of some 1,500 people shows cervical and kidney cancer at over five times the national average with four times the average leukaemia diagnoses and double the national rate for breast cancer.

The questionnaire survey was conducted by a group of Burnham residents called 'Parents Concerned About Hinkley' and analysed by Dr Chris Busby who, over the past two years, has found high cancer mortality in the town. This differs from all previous studies as it examines the number of people reporting cancer in a questionnaire.

The survey confirms Dr Busby's findings published two years ago (1) showing that breast cancer deaths in North Burnham electoral ward were double the national average. It also exposes other high cancer rates not available from the Office of National Statistics from which he drew his earlier conclusions.

Chem 2 budget ~£5

Dr Busby said, "This is the first citizens' health survey of this sort in the UK and I applaud the group for their very hard work. They were forced to go down this road as the Health Authority refused to publish its figures. Now we see a picture confirming my fears that Hinkley discharges are responsible for severe health problems here. All the epidemiology points to that conclusion."

Dr Busby's work has been testing the hypothesis that radioactive particles discharged into the sea are deposited on the local mudbanks, blown downwind and inhaled by residents on a chronic basis, triggering the cancer. This theory is supported by the survey which shows over half of those diagnosed with cancer have hobbies involving the sea, eg water-sports or digging for bait on the beach. Out of ninety five people with cancer going back to 1989, forty-nine

(52%) took part in sea connected activities.

Fourteen of the cancer group had outdoor jobs (15%) and twelve ate local fish or shell-fish regularly (thirteen per cent). Twenty per cent (20.7%) of the cancer sufferers were smokers, which is less than the twenty seven per cent average of smokers in the UK ('Action on Smoking' figures) or the 35 per cent of hospital cancer patients who are smokers.

The survey sponsors, Stop Hinkley, are currently campaigning against a new nuclear power station proposed for Hinkley and together with 'Parents Concerned About Hinkley' held an opinion poll in Burnham in January on the subject. Eighty three per cent of Burnham residents said they did not want another nuclear plant.

In a report from the DTI published in the New Scientist last week, the government has suggested compensating local communities for 'perceived disbenefits' of new nuclear build. Jim Duffy, the group's coordinator said, "We are certainly witnessing some severe disbenefits of living under a nuclear power station and the government should surely compensate these individuals and their families for shortening their lives. But a new power station must be completely off the agenda now. People prefer their health to any amount of money"

Jim is also concerned about the stance of local health officials. He had asked Somerset Health Authority at the start of the survey how many cases of leukaemia existed in Burnham and was told 'none' but the survey revealed four cases. He said, "Our distrust of the Health Authority cannot be overstated."

Dr Busby was recently shocked when, using the Data Protection Act, he uncovered internal health authority papers with Burnham cancer statistics. In an email, the health authority described a 'quick and dirty' study they had put together but had made a basic error leading to lower the apparent cancer risks. The population figures for the year 2000 were wrongly applied to a ten year study that ended in 1998. This according to Dr Busby falsely deflated the apparent cancer incidence due to the increase of both the general population and the elderly population giving a higher expectation of cancer.(2)"

He said, "The authorities now should meet with me and agree the terms of a study in which all parties can have confidence."

Dr Busby will announce the full findings of the survey and its implications in a public meeting at the Princess Hall in Burnham-on-Sea at 7.30pm on July 18th.

A demonstration will take place at 11am on the Saturdays either side of the public meeting on Burnham Beach to draw attention to health risks from the

polluted shoreline.

Jim Duffy 01984 632109 M: 07968 975804 E:
stophinkley@aol.com
Stop Hinkley Coordinator
Chris Busby 01970 639315 E: christo@cato5.demon.co.uk
Green Audit
Julie Gilfoyle 01278 794788 M: 07971 744372
Parents Concerned About Hinkley

Table 1: (correct on 11th July '02 in advance of the final report but subject to updating)

These preliminary results show cancer INCIDENCE not mortality. This gives a tighter correspondence to environmental causes and confirms the findings of local cancer mortality studies Dr Busby has undertaken over the past two years (1).

Cancer Findings Nos expected Relative Risk+ Significance*

Cancer incidence in a six year period from 1996-2001:
Kidney cancer 5 cases 1.26
3.96 poisson .01
Cervical cancer 3 cases 0.54
5.6 poisson .01
Breast cancer 16/17 cases 8.1
1.97 / 2.1 poisson .004
Leukaemia 4 cases 1.46
2.73 poisson .05

Cancer incidence over four years: 1998-2001
Kidney cancer 5 cases 0.84
5.95 p .001
Cervical cancer 2 cases 0.36
5.6 p .01
Breast cancer 9 cases 5.4
1.7 p .08
Leukaemia 4 cases 0.96
4.09 p .02

+ Relative risk or multiplier of national average, eg RR 5.6 means 5.6 times the national average or more accurately, times the expected number, weighted for age and other factors.
* Statistical significance is proportionally higher with a lower poisson factor, eg a poisson factor of

.01 means 1 chance in 100 of this occurrence randomly.
P .001 is one chance in a thousand.
All the above figures are statistically significant.

Table 2:
Figures for All Cancer diagnoses: The 'doorstep survey' showed a reduction going back in time, probably due to the death of those diagnosed in earlier years or their commitment to in-patient health care. For this reason the study examines only the last six years in detail.

Year: 2001 2000 1999 1998 1997 1996
1995 1994 1993 1992 1991
Cases: 15 12 8 8 10
7 6 4 2 4
3

1990 1989 1988 1987 1986 1996-1971
1 3 0 3 1
4

Expected cases per year: 11.

(1) Dr Chris Busby, Breast Cancer and Proximity to Hinkley Point Nuclear Power Station, April 2000. Green Audit, Aberystwyth.
(2) Call for fax copies of Health Authority internal email and regional press coverage.

-------- End of forwarded message --------

Subject: Re: CHESS proceedings
Date: Tue, 04 Sep 2001 20:33:02 -0500
From: Nityanand Jayaraman <nity68@vsnl.com>
To: "Community Health Cell" <sochara@vsnl.com>
CC: mangoforu@vsnl.net, pss@narmada.net.in, thanal@vsnl.com

hello lalit and dr. praveen:
i'm afraid i have bad news. i do not think i will be able to put together the white paper. i over-committed and will not be able to meet this commitment. my apologies.
ciao, nity

At 11:26 PM 9/4/01 +0530, you wrote:
>>>>

> Dear Nityanand, We were just in the process of putting together the proceedings of the skillshare and were wondering if you could send us a note of the White Paper which was going to be sent to the Planning Commission. If you have not already got the final copy ready a note detailing the points which are going to be raised will suffice. We plan to bring out the proceedings in about 2 weeks time so if you can give us the final submission by then that would be great. Regards Dr. Praveen and Lalit narayan
> Community Health Cell
> 367, 'Srinivasa Nilaya', Jakkasandra 1st main,
> 1st block, Koramangala, Bangalore- 560 034
> Phone: 5531518 Fax: 5525372

E - 8A-7.

Subject: Write to help the people
Date: Tue, 11 Sep 2001 12:45:59 +0530
From: "Jayakumar" <thanal@md4.vsnl.net.in>
To: CHESS:@md4.vsnl.net.in
CC: kadalama@yahoo.com

dear all

I remind you the earlier postings on endosulfan poisoning in Kerala.the pesticide industry is here and trying their best to lift the ban.

If you can write one mail that is going to change the balance and tilt the issue towards the people. We are looking for about 500 + mails. please bcc the mail to us. If any of you like to write the newspapers on the issue we will be extremely happy to give you the mail ID . We need your support now. Please help.

here is a draft letter addressed to the chief minister of kerala. Pleas add your name and address at xxxx

TO.
The Hon'ble Chief Minister A.K. Antony
Government of Kerala.
India.
cmkerala@kersect.ker.nic.in

Dear Sir:

We are writing this in appreciation of your decision to suspend all uses of Endosulfan until further orders. We are happy to note that responsible leaders like you are prepared to act on the Precautionary Principle and uphold the priority of the Right to Life over private profits by selling poisons.

Kerala is a beautiful land and we hope that it will continue to remain so. We were in fact pained to read about the Kasaragod tragedy and reports about the manner in which the poisonous pesticide Endosulfan has been used in and around the cashew plantations in Northern Kerala. We did not expect this in a land famous for its natural beauty and traditional health systems.

Chemical pesticides are all dangerous and such poisons enrich only one constituency -- the manufacturers and dealers. In the long run, neither the farmers, the environment or the regional economy is likely to inherit anything other than a toxic legacy of barren farmlands and poisoned people. In fact, it is ironic that chemicals like Carbaryl (or Sevin) -- the pesticide manufactured by Union Carbide in Bhopal at the time of the disaster -- continues to be marketed with abandon, and even recommended by the Scientific institutions in India.

There already is overwhelming evidence that these pesticides and chemicals are intensely hazardous to the environment and human health, particularly more so in areas like Kerala that are blessed with abundant rainfall and criss-crossing water bodies.

Humanity is trapped in a vicious cycle of pesticide use and bold measures like yours are needed to get out of it. It gives us all the more reason to value your land, people and your products in high

W. Dr. Praveen
12/9/01

esteem.

We urge you to continue with your good work, and assure you our support in moving Kerala from the insidious pesticide treadmill onto the path of truly sustainable and equitable agriculture, and show the world the way forward towards a progressive agricultural system.

Also since the National Institute of Occupational Health has planned a study in this area at the request of the National Human Rights Commission perhaps any further decision on the ban should also be considered only after their report is available

Sincerely,

xxxxxxxxxxxx

Conformity copy follows

Please change the text if you wish so if you need more information please mail me.

Sridhar

Jayakumar C.
Co ordinator, Thanal Conservation Action and Information Network, P B # 815 , Kawdiar , Thiruvananthapuram , Ke
Pin 695 003
mail : thanal@vsnl.com
Tel : ++91-471-311896 Fax : ++91-471-435452

Subject: Re: Reply from Ravi Narayan
Date: Fri, 4 Oct 2002 21:35:05 -0700
From: mnichter@email.arizona.edu
To: sochara@vsnl.com

9/10/02

I am in India right now and will be here till Oct 16th. I will be checking my e-mail at this account when I am able, but there may be times this is not possible (especially after Oct 3rd).
If your message is urgent send a copy of your message (only a short message -- no attached files) to manichter@hotmail.com

KHETI VIRASAT
Working Group of Medicos on Agro-Chemicals & Health
St. No.-1, Kamla Colony, Patiala Gate, Nabha – 147201: Ph# 01765 – 524907: Email: khetivirasat@khetivirasat.com

Medicos Workshop on" Impact of Pesticides on Health: A critical and in-depth scientific analysis" will be held on Oct. 27at Patiala

Dear Healers,

Pesticides use has became an institutional practice all over the world. The health hazards caused by them are an equally established fact. The decade from 1980 to 1990 alone saw the area under pesticides in India increase a whopping 20-fold, from six million hectare to 125 million hectare. The contamination of food products in the country is alarming. About 20% of Indian food products contain pesticide residues above tolerance level. Studies show that pesticides can cause health problems, such as birth defects, nerve damage, cancer, and other effects that might occur over a long period of time. World Health Organization (WHO) estimates one million pesticides poisoning cases and 20,000 deaths every year globally.

In this scenario it is desirable that awareness is created regarding the hazards, which could be caused by the pesticide residues in the food products and fodder.

As the loop holes are now becoming evident as a result of Green revolution and its effects on the soil health and environment health: before in our country also pesticides start causing serious health hazards, it is our earnest duty to prevent this, taking lessons from the countries who are already facing the doom.

As you are aware –

- Pesticide residues in food, water, soil and fodder
- Environment pollution
- Ecological imbalance

Are the areas, which concern far as a physician or healer of any type directly. This is causing the growth of mutant organisms resistance to drugs and modified picture of the ailments also.

Looking to this we has organized a workshop especially for medical fraternity. To enthuse and request them to act early on this like by educating the public on this issue. This being an area where you all can be more effective and acceptable to receive an informative from; we feel your active participation will go a long way in making this workshop a success. As you are an established signature in the field, I here by requesting you to attend and participate in proposed Workshop .Experts from AIIMS, New Delhi, Centre for Occupational and Environmental Health, LNJP Hospital, Delhi; Indian Institute of Health Management, Jaipur will also take part in this workshop. Apart from this several environment activists and representatives of NGOs are also expected .The officials from Planning Commission, Indian council for medical research and Ministry of Health & Family Welfare are also invited.

We have already received the confirmation and acceptance by -

- Dr. V.N. Pandey (Former Director, Central Council for Research in Ayurveda and Siddha)
- Dr. S.K. Mishra (Former Dean, Ayurveda, Lucknow University)
- Dr. Anand Kumar (Prof. & HOD of Reproductive Biology, AIIMS)
- Dr. Ajay Kumar (Gastroenterologist & Hepatologist, Apollo Hospital)
- Dr. D.B. Boralkar (Assistant Secretary, Central Pollution Control Board)

- Dr.S.G.Kabra, (Member Faculty, Indian Institute of Health Management & Research, Jaipur).
- Dr. Ashutosh Halder (Assistant Prof. Deptt. Of Reproductive Biology, AIIMS)
- Dr. K. Gopal Iyer (Prof, Deptt. of Sociology, Punjab University, Chandigrah)
- Dr. C.K. Katiyar (Dy. GM, Dabur Research Foundation)
- Dr.A.T.Dudani Agricultural Microbiologist & pesticide Expert
- Dr.N.N.Mehrotra, Senior Scientist, Central Drug Research Institute, Lucknow
- Dr.Bhramh Dutt Sharma,School of Environment,JNU,Delhi
- Dr.Bharatendu Prakesh,CSV,Bhanda(UP)

The list of confirmation of other experts and resource persons is under process.
With warm regards – and anticipating active cooperation.
Yours truly,

Umendra Dutt
Director
Kheti Virasat
B-36 / G-1,Dilshad Garden,Delhi-95
Ph:2270982
E-mail:umendradutt@khetivirasat.com
umendradutt@rediffmail.com

For more information please contact:

Dr. N.K. Sharma
Convenor, Working group of Medicos
Samania Gate, Patiala
Ph:0175-321041
E-mail:drnksharma2002@yahoo.com.sg

Note: The registration starts at 8:30 AM on27th Oct. 2002. And first session will start at 9:15AM sharp. Please make your tour programme accordingly

Subject: Today's Headlines: Friday, August 30, 2002
Date: Fri, 30 Aug 2002 10:07:35 -0400
From: "World Bank Press Review" <devnews@worldbank.org>
Reply-To: newsbureau@worldbank.org
To: "DevNews Press Review" <devnews@lists.worldbank.org>

Today's Headlines: Friday, August 30, 2002

- Worldwide Toxic Chemicals Ban Agreed.
- US to Spend $1 Billion for Environment, EU Promises Access to Water, Energy.
- Industrialized Nations Agree to ODA Boosting Target.
- Battle over Trade Issues Continues at Earth Summit.
- Commentary on the Earth Summit.

Worldwide Toxic Chemicals Ban Agreed

The world's first international agreement to ban the use and production of toxic chemicals has been reached at the Earth Summit in Johannesburg, reports the Times of London. All countries will have to ban chemicals that are hazardous to human health or the environment by 2020. The Frankfurter Allgemeine Zeitung (Germany) also reports.

It is the most significant step forward at the troubled summit and the surprise deal was struck only after a U-turn by the US, the story says. It is a significant victory for the EU delegation, which had expected the US to hold out until heads of state arrived next week. The US had been strongly opposing any targets and was worried about the effect of the agreement on its industry.

The agreement means that 190 countries will have to clamp down on dangerous chemicals in consumer products, as well as on factories that release toxic chemicals into the environment. The main beneficiaries will be the billions of people in the developing world who at present have little legal protection. Western companies that sell toxic chemicals to developing countries could be severely affected as could companies such as Shell and Mitsubishi that have factories there with poor pollution records.

Chemicals that face global bans include lindane, parathion, pirimiphos and lead additives for petrol. These are banned in the EU, but European manufacturers make them in Europe and then sell them to Africa and Asia.

An official of the British delegation at the summit said: "We are very pleased that this target has been agreed. It is a target that all UN countries will be striving to achieve by 2020. It demonstrates the real value of this summit." Mike Childs of Friends of the Earth, said: "The implications are huge. It is a vote of confidence in EU proposals and a huge defeat for the chemicals industry."

The US had said that it opposed all targets and EU governments feared that that may render the final agreement worthless. This week, however, the US backed down on targets to protect fish stocks and marine environments. It is thought that it has made concessions on chemicals and fish for tactical reasons, making it easier to hold out on targets for providing sanitation in the Third World and increasing the use of renewable energy.

A delegation of senior American politicians accused US President George W. Bush of undermining the war on terrorism by blocking plans to alleviate world poverty and tackle environmental problems, the story notes. The delegation, all Democrats, said that vetoing efforts to tackle issues that were "life and death to hundreds of millions of people" would have far-reaching consequences. "You can't opt for multilateral cooperation on only the things you have an interest in," said George Miller, a California congressman. "The President is pressuring governments to fall in line on

To
RKN/RRP for information
↓
then CHESS Resource file →
RN
2/9/02

Please print on
Very important
document
RN
2/9/02

RN
2/9

This has 12 pgs - please let me know when you need these

DY

Subject: HLL STUDY
Date: Tue, 17 Sep 2002 15:50:21 +0530
From: Community Health Cell <sochara@vsnl.com>
To: Premala Mascarenhas <Premala.Mascarenhas@unilever.com>
CC: cpandav@now-india.net.in, "Mr.A.S.Mohammed" <aa.sjmc@vsnl.com>, "Dr.H.R.RajMohan" <rohcbng@yahoo.co.in>, psychiatry@nimhans.kar.nic.in, venky_tv@hotmail.com, mki@nimhans.kar.nic.in

Dear Dr. Premala,

Greetings from Community Health Cell!

Thanks for your letter dated 11th September requesting for a copy of the document.

Attached is a copy of the Peer Review document that was prepared by CHC based on the HLL presentation at CHC in November 2001. We are still optimistic about getting a copy of the study report, from HLL. The hesitation is un-understandable!.

We were invited by the India People's Tribunal as an expert professional witness for the People's Hearing at Kodi a few days ago and Dr. Mohan Isaac presented a summary of this to the Tribunal. We were surprised to find that no one from HLL medical team was on hand to present your study findings. I think its important for HLL's public image to attend these meetings and events as part of corporate social responsibility. Gone are the days when we can dismiss public hearings as the work of misinformed activists. All of us academics, researchers, NGOs and industry must be ready to be transparent and accountable in our public work and NGO activists are a very serious professional group nowadays. I think it was a missed opportunity for the medical team in HLL.

Recently we had a second national workshop where along with professionals from a large number of research centres including NIOH , National Institute of Miners Health, CEHAT, Achutha Menon Centre – Trivandrum, etc, we trained 30 community NGOs dealing with industrial and environmental toxins in lay epidemiology skills as our contribution to capacity building in research to enhance people's health.

Best wishes,

vi Narayan,
MD(AIIMS), DTPH (London), DIH (UK),
Community Health Adviser,
CHC / PHM.

Premala Mascarenhas wrote:

> Dear Dr.Ravi,Further to our telecon ,would be grateful if you could let me have a copy of the peer review document that was prepared by CHC,based on the HLL presentation made to you in November 2001.Many thanks and regards,Premala.

Thermometer HLL study1.doc	**Name:** Thermometer HLL study1.doc **Type:** Winword File (application/msword) **Encoding:** base64

CHESS | HLL file →

iject>

Subject: <No Subject>
Date: Wed, 11 Sep 2002 15:13:40 +0530
From: "Premala Mascarenhas" <Premala.Mascarenhas@unilever.com>
To: Sochara <sochara@vsnl.com>

Dear Dr.Ravi,
Further to our telecon ,would be grateful if you could let me have a copy of the peer review document that was prepared by CHC,based on the HLL presentation made to you in November 2001.
Many thanks and regards,
Premala.

13/9/02

Dear Dr Premla

Enclosed a copy of the Peer Review Document that was prepared by CHC based on the HLL presentation at CHC in November 2001. We are still optimistic about getting a copy of the study report from HLL. The hesitation is incomprehensible/ we were invited by the Indic Peoples Tribunal as an expert professional witness for the Peoples Hearing at Kodi a few days ago and Dr Mohan Isaac presented a summary of this to the Tribunal. We were surprised to find that no one from HLL's Medical Team was on hand to present your study findings. I think its important for HLL's public image to attend these meetings and events as part of corporate social responsibility. Gone are the days when we can dismiss public hearings as the work of misinformed activists. All of us academics, researchers, ngos and industry must be ready to be transparent and accountable in our public work. I think and ngo activists are a very serious professional group

RM 13/9

it was a missed opportunity for the medical team in HLL. Recently we had a second national workshop where along with professionals from a large number of research centres including NIOH, National Institute of Epidemiology, National Institute of Mines Health, CEHAT, Achutha Menon Centre, Trivandrum & we trained 30 community NGOs dealing with industrial and environmental toxins in lay epidemiology skills as our contribution to capacity building in society

Best wishes

Yours sincerely

Ravi Narayan
CH Adviser

Best wishes
Ravi Narayan
CH Advisor
CHC/PHM

enhance peoples health.

mm&P
mines, minerals & PEOPLE
No. 8-2-590/B
Road No 1, Banjara Hills
Hyderabad 500034, AP, India
Tel: 6637974, Telefax: +91-40-3352488
Email: mmpindia@hd2.dot.net.in
Website: www.mmpindia.org

To, community health cell.
Karnataka.

Dear friends.

Warm greetings from mm&P National Secretariat. We ourselves are amazed at how quickly a year goes by as we are preparing for the next annual convention already! We wanted to inform all the members in advance so that we have the time to plan it together so that the four days that we meet can be effectively utilized for intensive deliberations on how we wish to take forward the issues of mining as a national alliance.

The Third National Convention on Mining will be held in New Delhi from 22nd to 25th October, 2002. We wish to invite you and your community representatives to participate in the Convention. The Convention will coincide with the international meeting on Climate Change where several nations will be deliberating on issues of environment and climate change as part of the United Nations Framework Convention on Climate Change (UNFCC). The UN convenes the global negotiations on climate change every year, known as the Conference of Parties (COP). The next conference (COP8) will be held in New Delhi from October 23-November 1, 2002.

As a parallel event to this official conference mm&P is co-organising a meeting on Climate Change and Justice from 26th to 28th October, along with other international and national groups like Corpwatch, NFF, NAPM, INECC and others to raise a public debate at an international level on climate change issues in India and the sub-continent. As mining has a very significant impact on climate change and people's livelihoods, this will give us an opportunity for mm&P members to present various mining issues and highlight them on this occasion. Some background information on climate change is enclosed with this letter for more detailed information.

With regard to the Third Convention, we'd like to have feedback and suggestions from you on the themes, subjects and issues that we need to focus this time. In our previous convention, we concluded with the discussion on the structure and nature of the alliance and decided that we will all bring to the Third Convention our suggestions and perspective. We hope you are giving a lot of serious thought to this. You could also give us addresses of groups who are working on mining issues whom we could invite for the convention. Based on your feedback, we will prepare the Agenda for the Convention and send you the details.

In solidarity,

Ravi Rebbapragada,
National Convenor

I would be interested to participate in this national Convention. It would also help me to help all the Group members of Mining group of CHESS-II coordinated. who have taken me as a contact person from CHC.
RRP
2/9/02

226
IN
19/8/02
Rm

RRP/RKN - Discuss
RN
30/8
RKN
RN
12/9

INDIA - PESTICIDES AND HEALTH MEETING : 8TH - 10TH OCTOBER 2002
INDIAN SOCIAL INSTITUTE, #24, BENSON ROAD, BANGALORE 46
PROGRAMME SCHEDULE

October 8th:
Arrivals and Registration in the morning - Registration starts at 10 am
Informal interactions and discussions upto lunch

2.00 - 4.00 pm
Introductions - all participants introduce themselves and their work briefly and highlight any work / conditions related to pesticides and health in their area

4.15 - 5.00 pm: Three presentations of case studies - 15 mts each
* Kasargod Endosulfan by ESPAC/Thanal
* Warangal Poisonings by Warangal
* Bhatinda by Kheti Viraasat, Punjab

DINNER: **7.30 PM to 8.15 PM**

8.15 pm - 10.00 pm: Video Screening
Videos to be screened: Showers of Misery/In God's own country/Living Dead on Endosulfan; Elizabeth's Guillette's film from Mexico; Toxic Trail and so on

October 9th:

Session I : Introduction to the subject and setting the tone:Three Presentations
8.30 - 9.00 am : Welcome and Introduction to the workshop
9.00 - 10.30 am : Global Campaigns against Pesticides: SAROJENI RENGAM
10.30 - 10.45 am: TEA
10.45 - 11.30 am: India - campaigns [past and present] : JAYAN
11.30 - 01.00 pm: Pesticides and health - ROMY QUIJANO
01.00 - 02.00 pm: LUNCH
02.00 - 02.45 pm: **Response to the Presentations in the morning**

Session II : Moving into the details - the Indian Scenario
03.00 - 04.00 pm: Indian Regulatory Mechanisms and how the industry operates: KHUSHAL YADAV, CSE

04.15 - 04.45 pm: Three Short Presentations, 15 minutes each
* Cardamon case study : USHA
* Pesticides and Public Health [DDT - Karnataka experience]: Dr RAVI NARAYAN
* "Pesticides handling" [transporation, containers, household level use etc]: RAJESH

05.00 - 05.30 pm : "Why have we not been able to eliminate pesticides in India so far?"

PUBLIC MEETING: 6 TO 9 PM; DINNER - AFTER 9 PM

October 10th:

8.45 - 09.15 am
Beginning of the Day: Introduction to the groundwork done so far from CHESS, follow up meetings and some of the thoughts brought out from such discussions, for consideration of this group

Session III : Group Task in three or four smaller groups
09.30 am to 11.30 am [incl. Tea Break]
"What collective strategies to identify health problems, assess the damage, communicate the same to the affected and the policy makers, and to launch a national campaign as a coalition - who are the key targets?"

Session IV: Sharing of group work
11.30 to 1.00 pm
Sharing of group work in the plenary; Panel to respond to the discussions [Romy and Sarojeni]

1.00 pm - 2.00 pm : LUNCH

Session V: Way Forward
2.00 - 3.00 pm
Way Forward: Broad National Strategy and Action Plans [incl. Roles and responsibilities]
3.00 - 3.30 pm
Any discussions required on organisational mechanisms, name for the coalition and so on

Last Session: Acknowledgements and winding up
3.30 - 4.00 pm
Acknowledgements and winding up of work done in the workshop

9th October 2002: Public Meeting in the form of a Panel Discussion Theme: Pesticides and Health Main Speaker: Dr Romy Quijano Panelists: Shri Muralidharan, Shri Mohan, Shri Narayan Reddy, Dr Prakash, Dr Ravi Narayan Dr Renee Borges, Dr Gururaj

E 8A.7.

Subject: RE: WSSD Child. Env. Health Indicators Brochure--Review
Date: Tue, 4 Jun 2002 10:01:37 -0700
From: "Stuart Gross" <stugross@umich.edu>
To: "Madhumita Dutta" <mdutta@vsnl.net>
CC: <schaudhry@ciel.org>, <sochara@vsnl.com>, <rajanpatil@yahoo.com>

Dear Madhu,
Great to have you on board! I will send you a draft as soon as it is available for review. In case I receive it in paper form, please, forward me a physical address to which I can send it.
Thanks,

Stuart

Dear Drs. Nayaran & Dr. Patil,
Please, see the original email below regarding a request for reviewers of a brochure on children's environmental health indicators to be produced for the WSSD conference in August. If you would like any more information, please, feel free to contact me.

Thank you,

Stuart Gross

-----Original Message-----
From: Madhumita Dutta [mailto:mdutta@vsnl.net]
Sent: Monday, June 03, 2002 10:41 PM
To: Stuart Gross; nity68@vsnl.com
Cc: schaudhry@ciel.org; sochara@vsnl.com; rajanpatil@yahoo.com
Subject: Re: WSSD Child. Env. Health Indicators Brochure--Review

Dear Stuart,

I think a good group to review this from India will be Commmunity Health Cell, a group of community health doctors working in environmental health issues. Not sure how foccused they are on chlidren health issues or whether they have time to review the brochure, but I think its worth emailing them. The people to contact at CHC are: Dr Ravi Narayan or Dr Thelma Narayan <sochara@vsnl.com>. I am cc'ing them this email as well.
Also Dr Rajan Patil from CHC might be able to help (his email is on the cc line as well).

Even though we are not children's env. health experts, but would like to get a copy of the draft brochure and if we have any comments would pass it on to you. Also will try and get it informally reviewed by some folks working on health issues, with focus on children's health (even if they do not work on environmental issues).

cheers
madhu

RN 5/6

At 05:36 PM 6/3/02 0700, Stuart Gross wrote:

RRP RN

RE: WSSD Child. Env. Health Indicators Brochure--Review

>Dear Ms Dutta Mr Jayaram Mr Sarangi and Mr Sladanah.

>
>My name is Stuart Gross and I am an intern at the Center for International
>Environmental Law (CIEL) in Washington, DC. I was recently given each of
>your names by Shivani Chaudhry in response to an enquiry I made to her
>regarding individuals and/or organizations who might be willing to review a
>brochure on Children's Environmental Health Indicators to be distributed to
>government ministers at the WSSD in August.
>
>Physicians for Social Responsibility (PSR)is coordinating a collaborative
>effort by government, international organizations, and civil society to
>produce the brochure. In order to ensure that it is so, PSR would like
>representatives from these sectors to review and comment on the brochure
and
>add their names to it as sponsors if acceptable. It is important that these
>representatives come not only from the global north and include a healthy
>contingent from civil society.
>
>If you or someone you know within or without your organization is
>sufficiently familiar with issues related to children's health and/or
>environmental indicators and has time to review a brochure of aprox. 20 pp
>on the subject in the next month or so, please, let me know.
>
>Please, contact me if you need anymore information. Information on PSR's
>environmental health program is available at www.psr.org/enviro.htm.
>
>Thank you in advance,
>
>Stuart Gross
>
>Summer Intern
>Center for International Environmental Law (CIEL)
>1367 Connecticut Ave., NW, Suite 300
>Washington, DC 20036 USA
>Tel: 1 202 785 8700, ext. 26
>Fax: 1-202-785-8701
>stugross@umich.edu
>www.ciel.org
>
>
>
>

Madhumita Dutta
Toxics Link
H 2 Jungpura, New Delhi 110 014
Phone: +91 11 4320711, 4328006
Fax: +91 11 4321747
email: mdutta@vsnl.net

Subject: Re: [tochesstwo] CHESS III planning
Date: Wed, 22 Jan 2003 10:10:42 -0400
From: Elizabeth Guillette <guillette@zoo.ufl.edu>
Reply-To: tochesstwo@yahoogroups.co.in
To: tochesstwo@yahoogroups.co.in

Hi to all,
I will be in Bhopal from Feb. 1 to Feb. 15, beginning research on the second generation of children after the MIC disaster. A short trip to Delhi would be possible during that time if anyone wants to talk. My latest research in Mexico shows that heavily exposed girls are not developing mammary tissue properly and in some cases it is totally absent. A scarey finding. Keep me updated on CHESS. Buzzy (Elizabeth)

--

Elizabeth A. Guillette, Ph.D.
Assistant Scientist, Department of Anthropology
PO Box 117305, University of Florida
Gainesville, FL. 32611-7305
Phone: (352) 375-5929 and (352) 392-2253
Fax: (352) 392-6929

RN
23/1/03

RRP/RKN For information

RN
23/1/03

RN
23/1/03

A few weeks ago we had 3 environment related workshops at the Asia Social Forum in Hyderabad. One on Environment and Health. A peoples campaign then a public hearing on pesticides; and another workshop on Toxic wastes. It was a chance for CHESS contacts to meet again. Nityo will keep you posted about what next on the CHESS front.
Best wishes
Ravi
PHM/CHC

Dear Elizabeth
Greetings for the New Year from CHC
which is now also the global secretariat of the Peoples
Health Movement from 1st Jan 2003. This is just to let you
know that Thelma and I will be in USA from 27th Feb
till 16th or 18th March on a tour full of speaking engagements,
community and media events on behalf of PHM-USA.
Ms Sarah Shannon of Hesperian Foundation (address + email)
is coordinating this visit. We start with a Bay Area Annual Health
Conference at Berkeley on Peoples Health in Peoples Hands - What works?
What doesn't? and who decides?. Then an itinerary that covers
Los Angeles, Stanford, Seattle, Boston, New York, Washington DC
and Atlanta. For details of the Bay Area Conference contact
Claire Norris at ______.

Subject: Re: [tochesstwo] CHESS III planning
Date: Thu, 23 Jan 2003 19:33:26 +0530
From: Community Health Cell <sochara@vsnl.com>
To: guilette@zoo.ufl.edu

Dear Elizabeth,

Greetings for the New Year from Community Health Cell, which is now also the global secretariat of the Peoples Health Movement from 1st January 2003. This is just to let you know that Thelma and I will be in USA from 27th February till 16th or 18th March on a tour full of speaking engagements, community and media events on behalf of PHM - USA. Ms.Sarah Shannon of Hesperian Foundation [Address: Executive Director, Hesperian Foundation, 1919 Addison Street, Suite # 304, Berkeley, California 94704 USA. Email: sarahs@hesperian.org] is coordinating this visit. We start with a Bay Area Annual Health Conference at Berkeley on 'Peoples Health in People's Hands what works? What doesn't and who decides?' Then an itinerary that covers Los Angeles, Stanford, Seattle, Boston, New York, Washington DC and Atlanta. For details of the Bay Area conference contact Claire Norris at cnorris@uclink4.berkeley.edu.

A few weeks ago, we had 3 environment related workshops at the Asia Social Forum in Hyderabad. One on 'Environment and Health: A Peoples Campaign'; then a public hearing on pesticide; and another workshop on 'Toxic wastes'. It was a chance for CHESS contacts to meet again. Nitya will keep you posted about what next on the CHESS front.

Best wishes,

Ravi Narayan
Coordinator,
PHM Secretariat
CHC - Bangalore,
India.

Elizabeth Guillette wrote:

> *Hi to all,*
> *I will be in Bhopal from Feb. 1 to Feb. 15, beginning research on the second generation of children after the MIC disaster.*
> *A short trip to Delhi would be possible during that time if anyone wants to talk. My latest research in Mexico shows that heavily exposed girls are not developing mammary tissue properly and in some cases it is totally absent. A scarey finding. Keep me updated on CHESS. Buzzy (Elizabeth)*
> *--*
> *Elizabeth A. Guillette, Ph.D.*
> *Assistant Scientist, Department of Anthropology*
> *PO Box 117305, University of Florida*
> *Gainesville, FL. 32611-7305*
> *Phone: (352) 375-5929 and (352) 392-2253*
> *Fax: (352) 392-6929*
>
> *To unsubscribe from this group, send an email to:*
> *tochesstwo-unsubscribe@yahoogroups.co.in*
>
>
>
> *Your use of Yahoo! Groups is subject to http://in.docs.yahoo.com/info/terms/*

CHESS III | PHM USA fL

RN
28/1/03

Subject: Re: [tochesstwo] CHESS III planning
Date: Thu, 27 Jan 2000 16:29:25 +0530
From: ananth@dialb.greenpeace.org
Reply-To: tochesstwo@yahoogroups.co.in
To: tochesstwo@yahoogroups.co.in, tochesstwo@yahoogroups.co.in
CC: pss@narmada.net.in, thanal@vsnl.com, mdutta@vsnl.net, samatha@satyam.net.in

Folks,

If I look at the objectives that Nity's mail puts out for CHESS at the bottom, I see that objectives 1 and 2 are what I would call networking and skill building objectives. the third one is a campaigning objective.

In an earlier round of mails on the subject again at the intiative of Nithy we had agreed that CHESS would not be a campaigning platform. I think the rationale that was offered then for the suggestion is still valid.

has been mentioned in the mail, the efforts at netwroking and building skills would lead to actual work possibilities. However these peices of work need to be carried out and then only do we have campaign tools.

We at greenpeace have plans in 2003 for tking a number of initiative that are building on the skills as well as the networks that emerged from CHESS. In the process, we would be working togteher with other people involved in the chess process.

I am somewhat surprised at the suggestion that the working committee be constituted of "people who bring in individual commitments rather than organisational". I wonder who we are refering to, as at CHESS II, most participants had organisational affiliations. I find this suggestion absurd and impractical.

The suggestions regarding individual members pay for their attendance to meetings in indeed a welcome one. At the last CHESS despite repeated announcements very few people came forward to pay their share of the costs. we need better [redacted]chanisms for this.

CHESS-III

RN
24/1/03

Regards

Ananth

On 22 Jan 03, at 16:15, nity68@vsnl.com wrote:

> *hello all:*
> *On 21 Jan, 2003, Madhumita Dutta, Ravi Narayan and i met at*
> *CHC to begin discussions on CHESS III and beyond. These last*
> *two years, we have had the CHESS meetings in Bangalore around*
> *the month of August. However, last year, we had some difficulty in*
> *mobilising money because preparation did not begin adequately in*
> *advance. At the bottom of this message, I have restated some of the*
> *founding principles of CHESS.*
>
> *Pl. read the message and comment particularly on item 3 and 4*
> *(meeting plans and funds)*
>
> *Summary of meeting:*
> *1. CAPE: Ravi explained the need for more inputs from CAPE into*
> *the CHESS process. The other members of CHESS are likely to*

RN
24/1/03

Subject: CHESS III planning
Date: Thu, 23 Jan 2003 18:33:47 -0800
From: "Centre for Resource Education" <creind@hd2.dot.net.in>
To: <nity68@vsnl.com>, <sochara@vsnl.com>, <thanal@vsnl.com>, <pss@narmada.net.in>, <mdutta@vsnl.net>

Dear Ravi, Nity and Madhu (and thanal and pss),

I agree with the suggestion that we can move away from being Bangalore-centric. It is good to see some progress with just three of you doing some thinking. I am not sure why we could not do the same at ASF.

I feel within our small group working on the CHESS PROCESS and committed to environmental health, there are some serious differences of opinion which are not being discussed openly. It is a different question whether we need to address them, when the process is to broaden the network and participation. But another thing is the cohesiveness, which is required for a strong network. In this background, I feel CAPE has some experience to share.

Further, I did not understand the desire that CAPE should retain the bilical linkages with CHESS. Can somebody elaborate on this?

All other points in this mail are acceptable and clear to me. However, the most difficult part is the operationalisation of the three objectives/goals of CHESS:

1. Develop the skillbase required to monitor and help communities monitor health problems among pollution-impacted communities
2. Develop mechanisms to intervene to mitigate health problems with an emphasis on community based solutions.
3. Use the information and experience generated from 1 & 2 above to influence government policy at various levels, to stop pollution and make the polluter pay.

There seem to be lot of difficulties in doing this, as the post-CHESS 1&2 work shows. We have to concentrate on these before we plan another CHESS.

more later.

CHESS III
RN
24/1/03

d. narasimha reddy
****
ase Note change in our office address:
Centre for Resource Education
Plot No 9, first Floor, Zehra House,
Brig Thyagraj Colony, Near AOC Gate,
Secunderabad 500 015
Ph 0091-40-5522 8864
----- Original Message -----
From: <nity68@vsnl.com>
To: <sochara@vsnl.com>; <thanal@vsnl.com>; <pss@narmada.net.in>; <mdutta@vsnl.net>; <creind@hd2.dot.net.in>
Sent: Wednesday, January 22, 2003 5:35 AM
Subject: RESEND: CHESS III planning

> *Hello Ravi:*
> *For some reason, couldn't post to the tochesstwo listserve. so the*
> *others are not likely to have received it. if you have the list of other*
> *email addresses, pl. forward this to them as well.*
> *ciao, nity*
>
> *------- Forwarded message follows -------*
> *From: Self <nity68@vsnl.com>*
> *To: tochesstwo@yahoogroups.co.in*
> *Subject: CHESS III planning*
> *Copies to: pss@narmada.net.in, thanal@vsnl.com, mdutta@vsnl.net,*

RN
24/1/03

samatha@satyam.net.in
> Date sent: Wed, 22 Jan 2003 16:05:20 +0530
>
> hello all:
> On 21 Jan, 2003, Madhumita Dutta, Ravi Narayan and i met at
> CHC to begin discussions on CHESS III and beyond. These last
> two years, we have had the CHESS meetings in Bangalore around
> the month of August. However, last year, we had some difficulty in
> mobilising money because preparation did not begin adequately in
> advance. At the bottom of this message, I have restated some of
> the
> founding principles of CHESS.
>
> Pl. read the message and comment particularly on item 3 and 4
> (meeting plans and funds)
>
> Summary of meeting:
> 1. CAPE: Ravi explained the need for more inputs from CAPE into
> the CHESS process. The other members of CHESS are likely to
> benefit immensely from CAPE's experience. It would be invaluable for
> CAPE to retain its umbilical linkages to the rest of CHESS. To this
> end, it was suggested that CAPE post regular updates on the CHESS
> listserve. For those of you not familiar with this, CAPE (Community
> Action for Pesticide Elimination) as a concept was born after two
> CHESS meetings to focus on the special health- related and campaign
> needs of pesticide-impacted communities. With time and growing
> participation, it is hoped that other similar spinoffs will happen to
> address the health-related and campaign needs of other sectors such as
> communities living near industrial estates, mining-impacted
> communities etc. 2. Dr. S.K. Dave of the National Institute of Miners'
> Health has been an enthusiastic supporter of the CHESS process, and
> has committed to support mining-imp community's requests for health
> monitoring etc. It was proposed that his offer be taken up very
> seriously, and be a focus point for CHESS III. Nity and Madhu will
> communicate this to mines, minerals & People and the Women in Mining
> network. 3. CHESS III: It was felt that the next meeting should not be
> held in Bangalore because it precludes wider participation from some
> sections of the country all the time. Two proposals were tabled for
> CHESS III.
> a) Hold CHESS III at a place accessible to activists from
> mining areas -- Jamshedpur, Ranchi, Bhubaneshwar etc. (Any
> other suggestions?) For this, we'd have to find a good local host. The
> advantage is that this could create the conditions for more
> mining-area people to participate and for a critical mass to be built
> on this sector a la CAPE.
> b) Hold series of regional and/or sector-specific meetings in 2-3
> places. While this has its obvious advantages, it also means that we'd
> need to identify more than one local host, and collectively deal with
> more than one logistics.
>
> FUNDS/WORK:
> For the work part, it would be important to constitute a working
> committee of individuals who bring in individual rather than
> organisational commitment of time. This group would be responsible for
> brainstorming meeting plans, synthesising inputs from various members,
> raising collective resources, and preparing proposals (workplans,
> memoranda, declarations etc) for the approval of the rest of the
> group.
>
> FUNDS: In keeping with the collective nature of the group, it
> would be important to keep centrally raised resources for the
> meeting to a minimum, to encourage contribution (above and
> beyond covering own costs) from members etc. Rather, collective
> resources can be raised for the work component, rather than the
> meeting.
>
> 1. Groups that have attended previous CHESS meetings and
> plan to attend CHESS III are encouraged to pay for themselves and
> contribute to the kitty. THIS IS NOT COMPULSORY.

Subject: Re: [tochesstwo] CHESS III planning
Date: Thu, 27 Jan 2000 16:29:25 +0530
From: ananth@dialb.greenpeace.org
Reply-To: tochesstwo@yahoogroups.co.in
To: tochesstwo@yahoogroups.co.in, tochesstwo@yahoogroups.co.in
CC: pss@narmada.net.in, thanal@vsnl.com, mdutta@vsnl.net, samatha@satyam.net.in

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CHESS-III

RN
24/1/03

Regards

Ananth

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> *1. CAPE: Ravi explained the need for more inputs from CAPE into*
> *the CHESS process. The other members of CHESS are likely to*

RN
24/1/03

> *Develop mechanisms to intervene to mitigate health problems with an*
> *emphasis on community based solutions. 3. Use the information and*
> *experience generated from 1 & 2 above to influence government policy*
> *at various levels, to stop pollution and make the polluter pay.*
>
> *CHESS is meant to be a collectively owned and collectively*
> *operated platform for sharing views and generating shared*
> *resources to achieve 1, 2 and 3 above.*
>
> *To this end, CHESS is neither centrally located nor centrally*
> *funded.*
>
>
>
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Subject: CHESS III planning
Date: Thu, 23 Jan 2003 18:33:47 -0800
From: "Centre for Resource Education" <creind@hd2.dot.net.in>
To: <nity68@vsnl.com>, <sochara@vsnl.com>, <thanal@vsnl.com>, <pss@narmada.net.in>, <mdutta@vsnl.net>

Dear Ravi, Nity and Madhu (and thanal and pss),

I agree with the suggestion that we can move away from being Bangalore-centric. It is good to see some progress with just three of you doing some thinking. I am not sure why we could not do the same at ASF.

I feel within our small group working on the CHESS PROCESS and committed to environmental health, there are some serious differences of opinion which are not being discussed openly. It is a different question whether we need to address them, when the process is to broaden the network and participation. But another thing is the cohesiveness, which is required for a strong network. In this background, I feel CAPE has some experience to share.

Further, I did not understand the desire that CAPE should retain the bilical linkages with CHESS. Can somebody elaborate on this?

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There seem to be lot of difficulties in doing this, as the post-CHESS 1&2 work shows. We have to concentrate on these before we plan another CHESS.

more later.

CHESS III
RN
24/1/03

d. narasimha reddy
****
ase Note change in our office address:
Centre for Resource Education
Plot No 9, first Floor, Zehra House,
Brig Thyagraj Colony, Near AOC Gate,
Secunderabad 500 015
Ph 0091-40-5522 8861
----- Original Message -----
From: <nity68@vsnl.com>
To: <sochara@vsnl.com>; <thanal@vsnl.com>; <pss@narmada.net.in>; <mdutta@vsnl.net>; <creind@hd2.dot.net.in>
Sent: Wednesday, January 22, 2003 5:35 AM
Subject: RESEND: CHESS III planning

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> *Subject: CHESS III planning*
> *Copies to: pss@narmada.net.in, thanal@vsnl.com, mdutta@vsnl.net,*

RN
24/1/03

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> contribute to the kitty. THIS IS NOT COMPULSORY.
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> sending fund-raising proposals in their names to take care of
> substantial portion of the costs. I suppose from amongst us, there
> will be people to help with such proposals.
> 3. Local fundraising with the help of a letter and through
> personal contacts.
>
> The meeting will be budget with no fluff. Your comments and
> support are critical.
> ciao, nity
>
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> *experience generated from 1 & 2 above to influence government policy*
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> *To this end, CHESS is neither centrally located nor centrally*
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To: <nity68@vsnl.com>, <sochara@vsnl.com>, <thanal@vsnl.com>, <pss@narmada.net.in>, <mdutta@vsnl.net>

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CHESS III

RN
24/1/03

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RN
24/1/03

samatha@satyam.net.in
> Date sent: Wed, 22 Jan 2003 16:05:20 +0530
>
> hello all:
> On 21 Jan, 2003, Madhumita Dutta, Ravi Narayan and i met at
> CHC to begin discussions on CHESS III and beyond. These last
> two years, we have had the CHESS meetings in Bangalore around
> the month of August. However, last year, we had some difficulty in
> mobilising money because preparation did not begin adequately in
> advance. At the bottom of this message, I have restated some of
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> founding principles of CHESS.
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> Pl. read the message and comment particularly on item 3 and 4
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> Summary of meeting:
> 1. CAPE: Ravi explained the need for more inputs from CAPE into
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Subject: [tochesstwo] (unknown)
Date: Fri, 24 Jan 2003 18:06:25 +0530 (IST)
From: nity68@vsnl.com
Reply-To: tochesstwo@yahoogroups.co.in
To: ananth@dialb.greenpeace.org
CC: tochesstwo@yahoogroups.co.in

hello ananth:
clarifying the points:
1. CHESS as campaigning organisation: Yes, it was agreed that chess is not a campaigning organisation, although many members are. my summing up is meant to convey that the objectives of the work we do in CHESS will equip members to assess health, design health care interventions and use the knowledge generated to facilitate policy change. CHESS is not expected to do all the health studies, or the health care interventions or the campaigning. Rather it will merely facilitate (as a platform) discussion and resource-sharing ideas for the same.

2. regarding individual v. organisational commitment for the working committee: The working committee will take on the responsibilities. It doesn't matter what organisations are going to be there. it was felt at the meeting that we would need individuals who have the time and inclination to take on and complete the work. i don't think there is anything barring an organisation from being part of the working committee. in the working committee, it would be useful to have people (in whatever capacity -- individual or organisational) who are thinking of CHESS as a whole and for CHESS, rather than wearing their organisational hat while fulfilling this role. That, i hope clarifies matters.

Finally, for all concerned, this email is a summary of a discussion between the three of us. it is meant purely as a proposal, and anything not agreeable to people can be rejected, modified whatever.
ciao, nity

ananth@dialb.greenpeace.org
wrote
Folks,

If I look at the objectives that Nity's mail puts out for CHESS at the bottom, I see that objectives 1 and 2 are what I would call networking and skill building objectives. the third one is a campaigning objective.

In an earlier round of mails on the subject again at the initiative of Nithy we had agreed that CHESS would not be a campaigning platform. I think the rationale that was offered then for the suggestion is still valid.

as has been mentioned in the mail, the efforts at netwroking and building skills would lead to actual work possibilities. However these peices of work need to be carried out and then only do we have campaign tools.

We at greenpeace have plans in 2003 for tking a number of initiative that are building on the skills as well as the networks that emerged from CHESS. In the process, we would be working together with other people involved in the chess process.

RN
27/1/03

I am somewhat surprised at the suggestion that the working committee be constituted of "people who bring in individual commitments rather than organisational". I wonder who we are refering to, as at CHESS II, most participants had organisational affiliations. I find this suggestion absurd and impractical.

The suggestions regarding individual members pay for their attendance to meetings in indeed a welcome one. At the last CHESS despite repeated announcements very few people came forward to pay their share of the costs. we need better mechanisms for this.

Regards

Ananth

On 22 Jan 03, at 16:15, nity68@vsnl.com wrote:

hello all:

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The meeting will be budget with no fluff. Your comments and support are critical.
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To this end, CHESS is neither centrally located nor centrally funded.

Subject: CHHESS - III
Date: Tue, 28 Jan 2003 09:41:51 +0530
From: Community Health Cell <sochara@vsnl.com>
To: Manu Gopalan <mangoforu@vsnl.net>, Kavitha Kuruganti <kavitha_kuruganti@yahoo.com>, Nityanand <nity68@vsnl.com>, Narasimha Reddy Dr <creind@hd2.dot.net.in>, Ananthpadmanabhan <ananth@dialb.greenpeace.org>, tochesstwo@yahoogroups.co.in, Jayan <thanal@md4.vsnl.net.in>, Madhumita Dutta <mdutta@vsnl.net>

Dear Folks,

Greetings from Peoples Health Movement Secretariat at CHC, India!

I have been reading responses from people to the CHESS II planning letter circulated by Nity. Just one or two clarrifications since I was at the small group discussion from which the letter evolved.

1. The suggestion about the individual rather than the 'organization' was mentioned a bit out of context of what we had discussed. I had mentioned the PHM experiences of having a National coordinating committee consisting of networks and organizations and a National working group of individuals nominated by their organizations to help the process more proactively. The NWG of PHM are all orgnizational representatives with the full backing of their organization - not individuals. However since they are identified as individuals there is continuity and enhanced commitment eg. CHC is a member of the NCC of PHM India and I represent CHC as a National Working Group.

All NCC need not nominate a NWC member. They do so only if they can spare someone who can give time. No NWG member is an individual. So Anant's concern and request for clarification is valid and I hope the above explains the context.

2.The comment on the linkage between CAPE and CHESS again seems mentioned ambiguously. CHESS is seen to be a larger expanding network of organizations and individuals. CAPE is a grouping within this around Pesticides as an interest group. Similiarly there may be a Mining and Health interest group evolving out of and beyond CHESS and perhaps another one around Industrial estates etc. We should be careful to ensure that though each of these groups like CAPE, may have smaller e-group lists they should continue to communicate on the CHESS group as well. The smaller e-grouping will be for campaign / advocacy but keeping in touch with the larger e-group will ensure that the 'Pesticides' or whatever issue is kept on everyone's information agenda at least. So like CAPE there may be any number of interests or working circles with the larger CHESS group but everyone is kept involved at some level of interest always.

3. Having networked for years, I believe that all serious differences of opinion should be discussed openly but from experience I believe that 'eyeball to eyeball' openness which is possible in an actual meeting is definitely better and more authentic than email dialogue which however informally worded is still somewhat formal and doesnot always resolve an issue and leaves it hanging in the air. Also emails go to everyone including many who do not know the issue and give all sorts of connotations to very simple questions / dialogue. This is just a caution not to use only emails to solve all the issues.

4. Incidentally from 1st January 2003, CHC has also become the global secretariat of the PHM and this will mean that I shall become fully involved in a large initiative. Rajkumar is leaving for Australia with his wife who is starting her MPH course. Rajan is deeply involved in a study on sericulture and child labour and Praveen will start PG soon. So for a while CHC involvement will be more low key till we find suitable contact. Till then Rajan will be the contact point.

Looking forward to others responses.

CHESS-III
RN
28/1/03

Best wishes,

Ravi Narayan
Coordinator,
PHM Secretariat
CHC - Bangalore

Community Health Cell

From: Madhumita Dutta <mdutta@vsnl.net>
To: Community Health Cell <sochara@vsnl.com>; <tochesstwo@yahoogroups.co.in>
Cc: <pss@narmada.net.in>; <thanal@vsnl.com>; <samatha@satyam.net.in>
Sent: Saturday, February 08, 2003 6:43 PM
Subject: Re: [tochesstwo] CHESS iii planning

Hi rajan,

Excellent, I will second Ranchi. Infact, it will give participants an oppurtunity to visit some of the mining impacted communities as well as mining areas. We can make these trips as part of CHESS 3 prog. Also it will be easier for small struggle groups from Orissa, Jharkhand, Chattisgarh to raech Ranchi.

madhu

At 17:30 07/02/2003 +0530, Community Health Cell wrote:
>
>Dear friends,
>
>Greetings from CHC !
>
>Just as we are in the process of deciding on the possible venue for the
>CHESS-3 meet, there is a suggestion from one of our associate Dr. Prabir
>Chatterji, to consider Ranchi as a possibility. Prabir has been involved
>with Jadugoda uranium mines campaign and other mines related issues with
>Ajitha, parvez and another Sr. who were part of mining group during CHESS-2.
>There are two Drs with public Health background at SDA health centre at
>Ranchi who could be helpful in facilitating CHESS-3. Additionally, Prabir
>chatterji and two of his colleagues with community health background could
>be good resource.
>
>I could get in touch with them regarding this at any time, if this venue is
>short listed.
>
>Rajan Patil.
>
>
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>To: <tochesstwo@yahoogroups.co.in>; <tochesstwo@yahoogroups.co.in>
>Cc: <pss@narmada.net.in>; <thanal@vsnl.com>; <mdutta@vsnl.net>;
><samatha@satyam.net.in>
>Sent: Thursday, January 27, 2000 4:29 PM
>Subject: Re: [tochesstwo] CHESS III planning
>

Community Health Cell

From: <nity68@vsnl.com>
To: <sochara@vsnl.com>; <tochesstwo@yahoogroups.co.in>
Cc: <pss@narmada.net.in>; <thanal@vsnl.com>; <mdutta@vsnl.net>; <samatha@satyam.net.in>
Sent: Sunday, February 09, 2003 2:18 PM
Subject: Re: Ranchi as venue

hello rajan:
Ranchi was a venue madhu had proposed, and we can find out from mm&P (mines, minerals and people) if they would along with Prabir take on some responsibility of organising the meeting. any other opinions?
ciao, nity

sochara@vsnl.com wrote
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I could get in touch with them regarding this at any time, if this venue is short listed.

Rajan Patil.

Community Health Cell

From: <ananth@dialb.greenpeace.org>
To: Community Health Cell <sochara@vsnl.com>
Sent: Wednesday, January 29, 2003 10:37 AM
Subject: Re: [tochesstwo] CHHESS - III

ravi,

I think your words of caution about networks and e-mail is well taken.

Regards

ananth

On 28 Jan 03, at 9:41, Community Health Cell wrote:

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> careful to ensure that though each of these groups like CAPE, may have
> smaller e-group lists they should continue to communicate on the CHESS
> group as well. The smaller e-grouping will be for campaign / advocacy
> but keeping in touch with the larger e-group will ensure that the

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Please ensure that all Relevant CHESS mail is shown to RKN|RRP and Ren filed. asap

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Why No One Can Say "Pesticides Are Safe"

By Mary H. O'Brien

PESTICIDES ARE DESIGNED to kill certain unwanted organisms, whether plant or animal. They often do more poisoning than they are supposed to, however. A pesticide that seems at first to be quite "safe" often turns out to cause damage no one foresaw. This is because there are so many different ways pesticides can cause damage.

1. A Pesticide may kill more than the pest. Lest than one out of 1,000 kinds of insects are pests, and yet most insecticides kill many kinds of insects, including those that help control the pest species. By living weight, soil organisms account for half of all living matter on earth and yet the effects of pesticides on soil organisms may be the least-researched area of pest control. Earthworm populations are dramatically decreased by most carbamate pesticides, for example. Fish are sensitive to poisons that contact their gill surfaces, so pesticides in water in amounts of only a few parts per billion (ppb) often kill fish. Fish-kill is often an expected consequence of pesticide runoff from agricultural fields. Mammals and birds are poisoned when they ear poisoned insects and animals or poisoned baits intended for other animals. Finally, human beings are all to frequently victims of pesticides.

2. A pesticide may remain a long time in the environment. Organochlorine pesticides (e.g., DDT, heptachlor, chlordane) are among the most persistent of pesticides, but other kinds of pesticides, such as the dipyridyl herbicide paraquat and the carbamate fungicide benomyl, may also persist for long period. These pesticides can accumulate over the years in soil, pond bottoms, to be taken up later by plants or released by soil organisms to poison further. For example, the half-life of the organochlorine pesticide toxaphone is 15 years in soil, meaning that 15 years after toxaphene is applied to soil, one-half of the pesticide will remain in the soil. After 30 years, one-fourth will remain.

3. A Pesticide May Travel Far. Pesticides may travel via air, soil, water, dust or organisms to affect living organisms far from where they were applied. Persistent organochlorine pesticides have been shown to travel thousands of miles after being sprayed before coming down in rain or snow. Certain pesticides also travel through food webs. Organochlorine pesticides are stored in the fat of animals and then accumulate in the bodies directly from contaminated water.

4. A Pesticide may turn into another poison. Almost nothing is know about many of the other changes a pesticide undergoes in the environment, but several are known to break down into even more hazardous compounds. For example, the organochlorine heptachlor is changed into heptachlor epoxide, a toxic poison, inside plants and animals. Parathion becomes another compound four times more toxic when it contracts oxygen. The organophosphate insecticide acephate turns into another pesticide, methamidophos,

inside plants, animals and sediments. Methamidophos itself is used to kill birds that feed on crops and is more toxic to birds than acephate.

5. A Pesticide may become more poisonous in the presence of other chemicals. Sometimes the toxic effect of one pesticide is dramatically increased in the presence of another pesticide or chemical. The toxicity of many pairs of organophosphate pesticides, for instance, is increased when they are combined. This effect is called *synergism*. Non-pesticide chemicals can also interact with pesticides. The toxicity of malathion, for instance, is greatly increased by a common industrial plasticizer, TOTP, even when malathion exposure occurs two weeks following the use of TOTP.

6. A Pesticide may poison by methods entirely different than those intended. Since most pesticides are designed to kill pests quickly, their long-term effects on humans, such as cancer, genetic damage, and birth defects, are all unintended side effects, Phenoxy herbicides, for example, are designed to kill *plants* by causing them to grow quickly, but they also poison *animals* by damaging their livers and are suspected of causing cancer in humans.

7. A pesticide may poison in such a way that it is hard to recognize that the poisoning is taking place. Several pesticide carriers (i.e. part of the formulated pesticide that is not the active ingredient) have been shown to increase the toxicity of viral diseases in mice. If a human became ill with a virus after exposure to a pesticide, it would be very difficult to prove that the pesticide had played a role. And researchers are only now beginning to learn that exposure to certain organophosphate pesticides may cause permanent damage to the brain, resulting in sleeplessness, memory loss, irritability, and other symptoms frequently not associated with pesticide poisoning.

8. Pesticide damage may show up long after the pesticide has left the body. Like X-rays, pesticides that are capable of causing genetic damage or cancer can initiate the damage in whatever period they are actually in the body. For example, the phenoxy herbicide 2,4-D is rapidly eliminated from the body, but several cases are known in which individuals briefly exposed to 2,4-D on their skin developed nerve damage in their arms and legs several weeks later.

9. A pesticide may be dangerous even if all label directions are followed. A pesticide, by definition and design, is intended to destroy at least some form of life. some uses and storage practices are safer than others and therefore recommended on labels. But the product itself remains hazardous. Even following the label exactly cannot guarantee it will cause no harm. In the U.S., it is illegal to print a label that claims a pesticide is "safe" or "harmless" for this reason. With pesticides manufactured, formulated, or exported into developing countries, the uncertainties multiply. And even if accurately labelled when shipped, a pesticide may be repackaged later in a way that fails to protects handlers and users.

10. A pesticide may cause damage that was never investigated before it was registered or not discovered during toxicological testing. Testing standards in the U.S. are the most complete and stringent in the world, yet even these are very inadequate. For

example, in the United States, almost all pesticides are conditionally registered, which means that not all required health tests have been completed and reviewed before they are allowed on the market. In 1983, only four out of over 600 active ingredients had been registered with all required tests. Only 38 percent of the pesticides on the market in the United States have been tested for cancer causing ability as required by law (i.e. passing two tests). Only 30 to 40 percent have been tested for birth defects, and less than 10 percent have been tested for genetic damage. In addition, studies of certain pesticide effects, such as those on children and other especially vulnerable groups, or effects on the body's immune system, are not required and are almost never done. Thus countries whose pesticide regulatory schemes have relied on U.S. data have inadequately tested pesticides on the market as a result.

Although there is no such things as entirely safe pesticides, many safe alternatives to pesticides are presently available, and many more are under investigation. While far more research in this area is still needed, there is already a beginning international movement by farmers away from heavy dependence on synthetic chemical pesticides and fertilizers, toward less toxic, more sustainable agricultural practices. Household pests too can frequently be controlled by a variety of techniques emphasizing a thorough understanding of the pests' life cycles and habitats. Individuals and groups working to develop and publicize alternatives to unsafe pesticides needs support from everyone, regardless what country they live in, for it is all the earth's inhabitants that benefit from their efforts to "detoxify" our planet.

References : Documentation for this paper is available from NCAP; P.O.Box 375; Eugene, Oregon 97440; USA.

Mary H.O'Brien is information Co-ordinator for the Northwest Coalition for Alternatives to Pesticides (NCAP), a coalition of citizen groups working for pesticides reform in the Northwest U.S. She holds a doctorate on Botany and is author of *On the Trail of A Pesticide: A Guide to Learning About the Chemistry, Effects, and Testing of Pesticides* (Northwest Coalition of Alternatives to pesticides, 1984).

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Campaign Groups

Thanal Conservation Action and Informatin Network,Thiruvananthapuram:
Represented by Usha.S, Sridhar R, Rajasree VV
A community oriuented organisation working on conservation issues and toxic related issues. Cuurently engaged in a community RIGHT TO KNOW campaign in Elorr, Kerala and a proposal to move Kovalam toward a zero waste model.
Email: thanal @ md4.vsnl.net.in
shreepadre@sancharnet.in
Address: Post Box No: 815, Kawdiar, Thiruvanthapuram, 695 003, Kerala
Phone: 0471 311896

Paryavaran Suraksha Samiti, Gujarat
Represented by Anand Mazgaonkar or Rajni Dave or Swati Desai
A Voluntary self help organisation working primarily in South Gujarat on a variety of issues, including Industrial Pollution and RIGHT TO KNOW.
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Citizens for alternatives to Nuclear energy(CANE)
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aravinda@cisco.com
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Community Health Cell

From: <kkurugan@dialb.greenpeace.org>
To: Community Health Cell <sochara@vsnl.com>
Cc: <ananth@dialb.greenpeace.org>
Sent: Friday, February 07, 2003 3:33 PM
Subject: Re: Dr.Ravi's Reply

dear dr ravi

thanks for your mail. i appreciate what you are saying. i am writing to dr abhay shukla and hopefully, he will agree to be part of the advisory board. thanks again. we will most probably be walking up to you now and then for advice ofcourse.

kavitha

Quoting Community Health Cell <sochara@vsnl.com>:

> Dear Kavitha
>
> Greetings from the Peoples Health Movement Secretariat at CHC,
> Bangalore!
>
>
> Thanks for your letter. I did see the earlier note. Much as I would have
> liked to be part of the Advisory group. I really feel that at this stage
> of transition between CHC adviser to PHM Coordinator, any new
> commitments may be unfair to PHM and to your study with my doing
> injustice to both commitments. I would suggest Sunil Kaul
> (scowl@satyam.net.in) or Abhay Shukla (abaysema@pn3.vsnl.net.inor
> cehatpun@pn3.vsnl.net.in), both public health trained professionals with
> a strong 'people oriented' commitment. Perhaps if you just keep me on
> the mailing list I shall bounce of a few ideas and suggestions from time
> to time but being a formal member at this stage - perhaps no. I am sure
> you will understand my predicament. I have 5-6 such requests everyday
> and for the next year, I am saying 'yes' only to those that have a
> direct PHM connection to maintain a sense of proportion. No exceptions
> however tempting!
>
>
> All the best in your efforts.
>
>
> Ravi Narayan
>
> Coordinator,
>
> PHM Secretariat,
>

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The Concept of Environmental Health

Definition

A branch of public health devoted to preventing illness through managing the environment and changing people's behavior to reduce exposure to biological and non-biological agents of disease and injury.

Environmental health is most concerned with examining the environment in terms of the agents, pollutants and other factors affecting human health.

The Environmental Health Perspective

There are two different perspectives to interactions between health population and the environment (*Figure 1*). In simple terms, an environmental perspective is concerned primarily with the effects of people on the health of the environment. A health perspective is concerned primarily with the effects of the environment in the health of the people.

Pre - and Post-transition Societies

In developing an environmental health approach, we need to consider the similarities and differences in the conditions of pre-transition and post-transition societies.

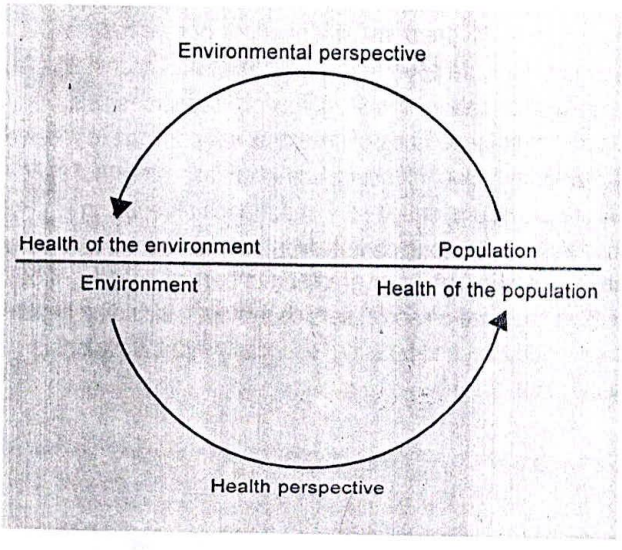


Figure 1. Health-Population-Environment Cycle

Pre-transition societies deal with diseases such as acute respiratory infections, diarrheal diseases and vector-borne diseases such as malaria.

In contrast, post-transition societies such as the New Independent States (NIS) deal with diseases related to the process of industrialization. Post-transition societies deal with nuclear issues, such as those in the Ukraine, and toxic and hazardous pollutants, such as those in the Aral Sea. These pollutants affect the Central Asian Republics and have tremendous impacts on human health. Other health issues, such as lead poisoning, affect people in both pre- and post-transition societies, especially those living in peri-urban areas.

The Environmental Health Approach: Prevention

The primary concern of environmental health is the prevention of illness. Prevention is far more cost-effective than curative approaches. Environmental health focuses on preventing illness by managing the environment and by changing behaviors. To reduce human exposure to agents of disease and injury, both environmental management and behavior change are needed.

As illustrated in *Figure 2*, wellness depends on successfully blocking the production, transmission and exposure of specific agents that contribute to illness. To determine where to intervene, we need to examine the pathways to maintaining wellness and preventing illness.

Traditional facility-based prevention programs, especially child survival programs, focus on building up or reinforcing the resistance of the individual or the host. For example, a vaccination program is a preventive intervention that focuses on building up the host's immunity to attack specific agents in the environment.

The traditional child survival approach has focussed on strategies such as immunization and breastfeeding, and measures to prevent low birth weight. All these interventions target the individual and essentially ask the question: What can we do to enhance the individual's ability to resist assault by agents in the environment? The approach taken by traditional prevention program is shown on the right of the vertical line drawn in *Figure 2*.

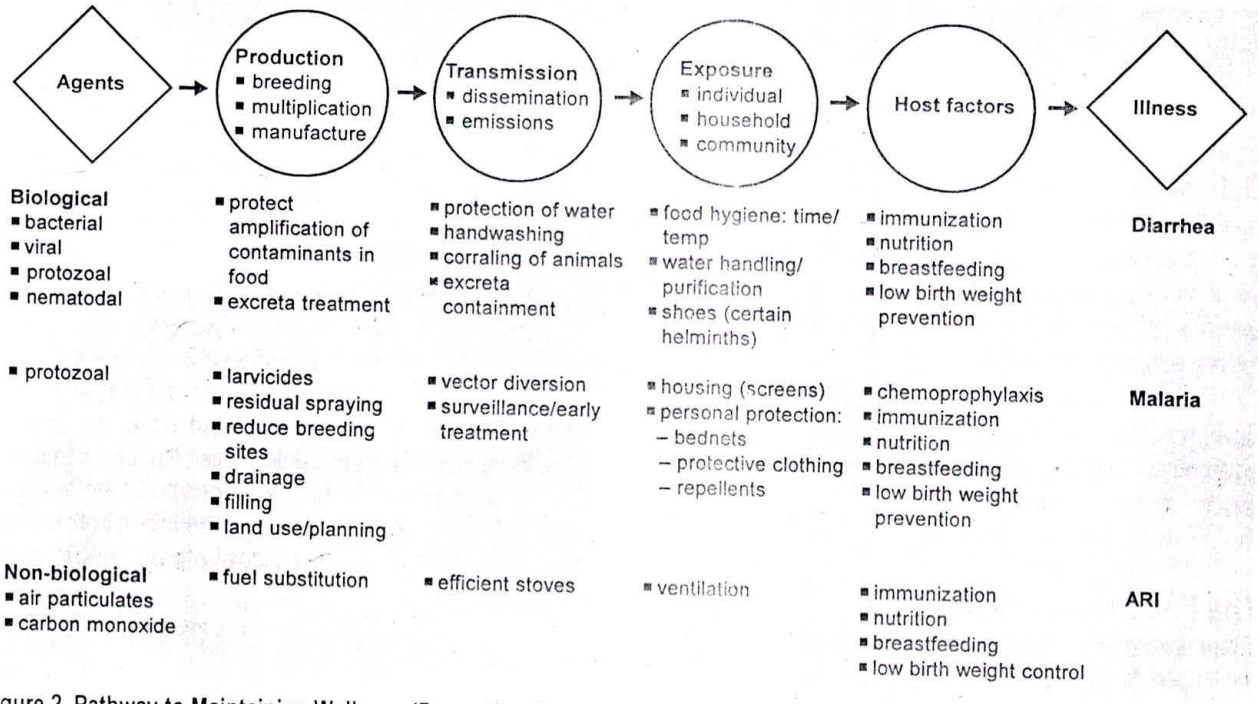


Figure 2. Pathway to Maintaining Wellness (Preventing Illness)

Environmental health addresses the determinants, or causes, of ill health as shown on the left side of the vertical line in *Figure 2*. The environmental health approach is to prevent the environmental agent from attacking the individual by focusing interventions at three distinct points: production (destroying mosquito breeding sites); transmission (use of more efficient stoves); and exposure (using bed nets to keep off mosquitoes).

Why Focus on Environmental Health

Investments in child survival over the last two to three decades have significantly reduced mortality and morbidity. Worldwide, from 1970 to about 1990, a significant increase in immunization coverage rates was accompanied by a dramatic drop in child mortality.

However, while immunization and other interventions build up the individual's resistance to environmental agents and have been quite effective in terms of reducing mortality and morbidity, it is still very difficult to reduce mortality much further and it will take even more resources to sustain the impact of these interventions.

For example, UNICEF emphasized the importance of achieving 80% coverage rates with the six available EPI antigens by 1990. Tremendous resources were directed to achieve that coverage target: approximately US$17 million was spent in both 1998 and 1989 to achieve 80% coverage in Nigeria. Then, in 1991 and 1992, support for EPI went from US$17 million down to US$3 million, and coverage rates dropped from about 80% to about 25%, with resulting increases in child deaths.

Donors and governments are questioning the value of supporting these kinds of facility-based, commodity intensive health programs, not because of their results, but because they are seen as too expensive and unsustainable. In today's climate of shrinking financial resources, it is unlikely that these kinds of programs will continue to receive the same amount of funding, and even less likely that they will receive more, despite the importance of reducing mortality. And as long as fertility rates and population growth remain high, ever greater numbers of people will be putting pressure on social service systems, including health care, education and housing, especially in the developing world cities.

Source:
John Tomarro, Chief Environmental Health Division, Office of Health and Nutrition, Bureau for Global Programs, Field Support and Research, USAID. Environmental Health Project Activity Report No. 16, PVO Workshop on Environmental Health, Arlington, Virginia. June 29, 1995.

Environmental Threats to Human Health

Literally, the word "environment" refers to whatever surrounds an object or some other entity. Humans experience the environment in which they live as an assemblage of physical, chemical, biological, social, cultural and economic conditions which differ according to local geography, infrastructure, season, time of day and activity undertaken. The focus of this is on the impacts of environmental conditions on health, and on the social and economic conditions that act as "driving forces" and put "pressures" on the environment (UN, 1993).

The different environmental threats can be divided into "traditional hazards" associated with lack of development, and "modern hazards" associated with unsustainable development (WHO, 1992a). The changing pattern of environmental health hazards and associated health risks – moving from "traditional" to "modern" with time and economic development – has been called the "risk transition."

One of the differences between the traditional and modern environmental health hazards is that the former are often rather quickly expressed as disease. For example, a villager drinks polluted water today and tomorrow he has severe diarrhea. Diarrheal incidence can accordingly be a relatively useful measure of the relevant risk and of our efforts to control it. For many modern environmental health hazards, however, a long period of time may pass before the health effect manifests itself . A cancer-causing chemical released into the environment today may not reach a person until it has passed through the food-chain for months or years, for instance, and even then may not cause development of noticeable tumor for decades. Similarly, environmental change occurring over several decades, such as stratospheric ozone depletion due to chloroflourocarbon emissions, may undermine the earth's life support systems. So far, modern environmental health hazards and understanding the environmental pathways through which the hazards move, is particularly important.

"Traditional hazards" related to poverty and "insufficient" development include:

- lack of access to safe drinking water;
- inadequate basic sanitation in the household and in the community;
- food contamination with pathogens;
- indoor air pollution from cooking and heating using coal or biomass fuel;
- inadequate solid waste disposal;
- occupational injury hazards in agriculture and cottage industries;
- natural disasters, including floods, droughts and earthquakes; and
- disease vectors, mainly insects and rodents.

"Modern hazards" are related to rapid "development" that lack health and environment safeguards, and to unsustainable consumption of natural resources. They include:

- water pollution from populated areas, industry and intensive agriculture;
- urban air pollution from motor cars, coal power stations and industry;
- solid hazardous waste accumulation;
- chemical and radiation hazards, following introduction of industrial and agricultural technologies;
- emerging and re-emerging infectious disease hazards;
- deforestation, land degradation and other major ecological change at local and regional levels; and
- climate change and stratospheric ozone depletion and transboundary pollution.

Source:
Health and Environment in Sustainable Development, Chapter 1: A New Perspective on Health, pp. 6-7. World Health Organization(WHO) -Geneva. 1997; Illustration provided by IIRR.

Environmental Contaminants Produced by Agriculture

Industrial activity has always resulted in pollution. But agriculture, for most of its history, has been environmentally benign. Even when industrial technology began to have an impact in the 18th and 19th centuries, agriculture continued to rely on natural ecological processes. Crop residues were incorporated into the soil or fed to livestock, and the manure returned to the land in amounts that could be absorbed and utilized.

Since the Second World War, this system was disintegrated. Farms in industrialized countries have become larger and fewer in number, highly-mechanized and reliant on synthetic fertilizers and pesticides. They are now more specialized, so that crop and livestock enterprises are separated geographically. Crop residues and livestock excreta, which were once recycled, have become wastes and disposal became a continuing problem for the farmer. Straw is burnt as this is the cheapest and quickest method of disposal. Livestock had been mostly reared indoors on grain and silage on farms where arable land was insufficient to take up the waste.

Coincident with these changes are the growing urbanization and population densities, coupled with increased effluence that have intensified the conflicts over land use. Urban populations which rely heavily on agricultural catchments for their drinking water, are demanding uncontaminated food and are increasingly valuing the countryside for attributes other than food and fiber production. Amenities, recreation and nature conservation are now important products of the countryside. Hiking, horseback riding, angling and camping are pursuits followed by millions. Thus, not only has the potential for contamination increased, but also the consequences, because of the greater value we now place on our environment.

Similar changes are beginning to occur in many parts of the Third World. The advent of new high-yielding cereal varieties as part of the Green Revolution, together with intensification of export crop agriculture, have resulted in a dramatic growth of pesticide and fertilizer use. Pollution problems are already apparent and are likely to worsen in the next few years (*Table 1* lists the kinds of pollution caused by agriculture). Although the use of the countryside for leisure is confined, at present, to a very few urban dwellers, many Third World countries are developing strong conservation movements among whose concerns are the effects of agriculture on wildlife.

The Nature of Pollution

At its most inclusive, the term "pollution" encompasses all unwanted effects of human or natural activities. According to this definition, an unsightly farm building would be classified as "aesthetic pollution". However, we use the term as more commonly and narrowly defined whereby a pollutant is a substance (e.g., a chemical compound or waste material) or an energy (e.g., noise) which produces unwanted effects. It is usual to restrict the term pollutant to substances or energies created by human beings while recognizing that, under certain conditions, natural processes generate "pollutants", for example the sulphur dioxide given off during a volcanic eruption. It is also useful to make a distinction between a contaminant, which is any substance or energy introduced by human beings into the environment, and a pollutant, which is a contaminant that is causing or liable to cause damage or harm.

The primary environmental contaminants produced by agriculture are agrochemicals — in particular pesticides and fertilizers. Contamination occurs when farmers use them for crop and livestock protection as well as improvement of

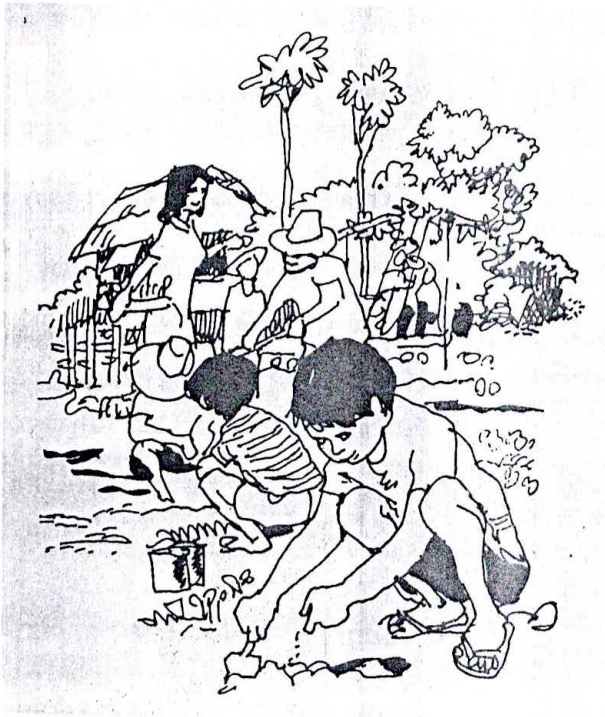
yields. Contamination is also caused by various wastes produced by agricultural processes in the same way that contamination is caused by industries. The wastes comprise straw, silage effluent and livestock slurry, and in the Third World, wastes from on-farm processing of agricultural products such as oil palm and sugar. From the immediate environment of the farm, contamination spreads to food and drinking water, to the soil, to surface and groundwaters and to the atmosphere, in some instances, reaching as high as the stratosphere.

Table 1. The Principal Pollution Caused by Agriculture

Contaminant or Pollutant	Consequences
Contamination of water	
Pesticides	Contamination of rainfall, surface and groundwater, causing harm to wildlife and exceeding standards for drinking water
Nitrates	Methaemoglobinaemia in infants; possible cause of cancers
Nitrates, phosphates	Algal growth and eutrophication, causing taste problems, surface water obstruction, fish kills, coral reef destruction; and illness due to algal toxins
Organic livestock wastes	Algal growth,plus deoxygenation of water and fish kills
Silage effluents	Deoxygenation of water and fish kills; nuisance
Processing wastes from plantation crops (rubber, oil, palm)	Deoxygenation of water fish kills; nuisance
Contamination of food and fodder	
Pesticides	Pesticide residues in foods
Nitrates	Increased nitrates in food; methaemoglobinaemia in livestock
Contamination of farm and natural environment	
Pesticides	Harm to humans; nuisance
Nitrates	Harm to plant communities
Ammonia from livestock	Disruption of plant and and paddy fields communities; possible role in tree deaths
Metals from livestock wastes	Raised metal content in soils
Pathogens from livestock	Harm to human and livestock wastes health
Contamination of atmosphere	
Ammonia from livestock manures and paddy fields	Odor nuisance, plays a role in acid rain production
Nitrous oxide from fertilizers	Plays a role in ozone layer depletion and global climatic warming
Methane from livestock wastes and paddy rice	Plays a role in global climatic warming
Products of biomass burning (cereal straw, forests, savannas)	Enhances localized ozone pollution of troposphere; plays a role in acid rain production, ozone layer depletion and global climatic warming; nuisance
Indoor contamination	
Ammonia, hydrogen sulphide, livestock wastes	Harm to farm worker and animal health; odor nuisance
Nitrogen dioxide from/in soils	Harm to farm silage worker health

Source:
Conway, Gordon and J. N. Petty. Introduction to Agriculture and Pollution, Unwelcome Harvest. 1991.

Human Health and Agriculture: The Ecosystem Approach



Human health and well-being depends on agriculture. A safe, readily-accessible food supply is the basis of security for individuals, communities and nations. Conversely, food is an effective way to expose people to a wide variety of health risks. As the consumption of food and water is the most intimate experience we can have with our environment, it is not surprising that a wide variety of environmental health concerns are associated with farming.

While the central management task of economically-oriented field such as fisheries, forestry and agriculture, has historically been to produce the greatest crop without endangering the resources being harvested (Krebs, 1997), managers must now also consider how to insure a vibrant industry while addressing the health of human communities. Few agronomists or veterinarians have sufficient appreciation of their role as guardians of public health to allow for the development of management practices that explicitly address issues relevant to human health.

Similarly, public health officials rarely have sufficient experience or insight into agricultural practices to allow them to address the complexity of human interactions with agriculture in their investigations or management plans. Thus, a new approach to integrating agriculture and health must be sought.

Ecosystem health has been proposed as a means of incorporating biological, social and health concerns into management decisions for a variety of food and resource sectors. Given the intimate links that agriculture forges among people, economies and environments, an ecosystem approach would ensure that health concerns, ranging from food-borne diseases to community stability, are explicitly incorporated into the daily farm management. Yet, despite government and scientific proclamations of support for an ecosystem approach, the problem of figuring out how to actually manage resources using this paradigm still remains.

Many discussions on ecosystem health apply a clinical medical model to ecosystems. Emphasis, in this approach, is placed on identifying critical characteristics that could be used to distinguish sick or stressed ecosystems from healthy ones and to identify factors that put ecosystems at risk (Rapport, 1989).

Arising from this analogy has been the call for "physicians to the environment" – professionals charged with maintaining healthy ecosystems (Nielsen, 1992). In simple terms, the basic function of a physician is to correctly classify a patient's health and restore it to what is considered normal. Medicine is a predictive art in which the practitioner compares observations made on a particular patient with cumulative observations and experience with similar patients in order to predict the fate of the patient as well as the success of potential therapeutic options (Sackett, *et. al.*, 1991). The question, central to the medical approach to ecosystems, is whether or not an ecosystem physician could provide the basic medical functions of diagnosis, prognosis and treatment.

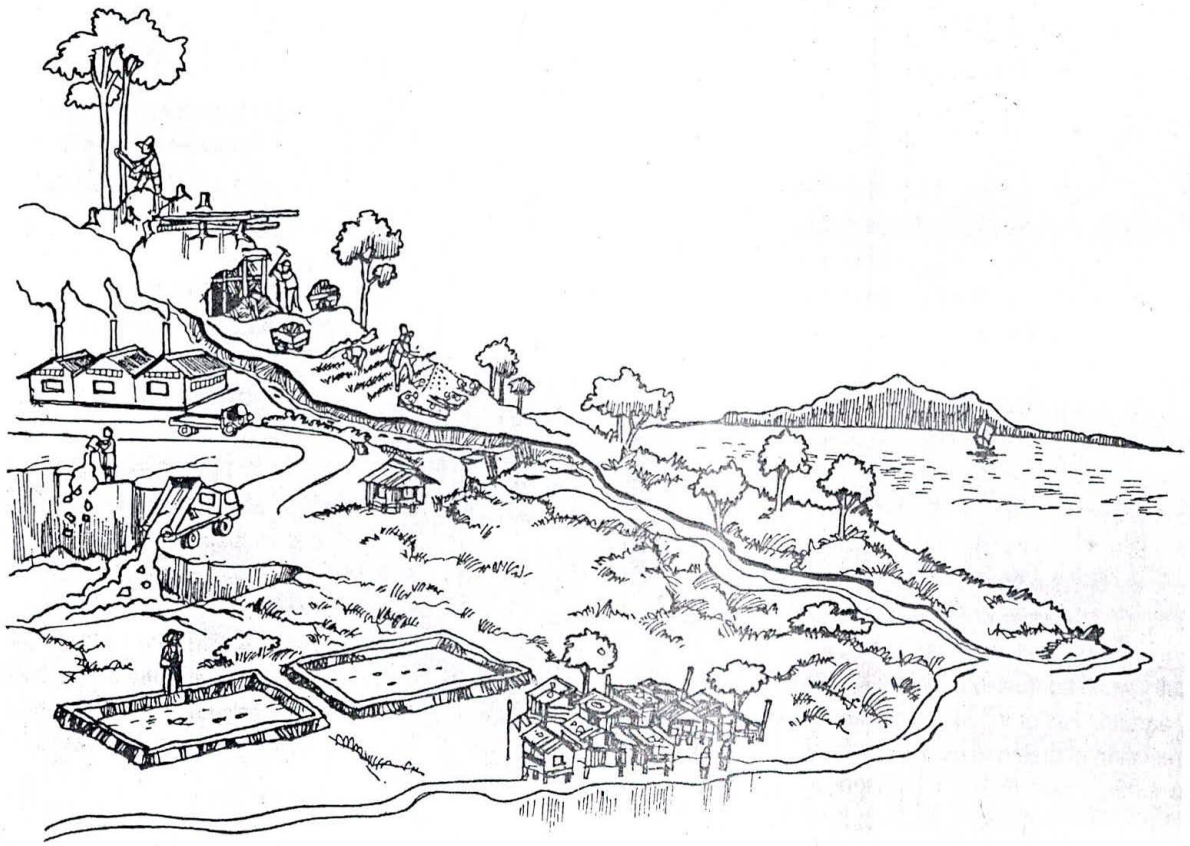
Diagnosis serves to determine how changes in physical or functional relationship of the parts of a patient's body affect the entire well-being. This also directs us towards a therapeutic plan which can restore the patient to what is considered normal. It acknowledges that the health of a patient is dependent on a normally-functioning homeostatic relationship of the parts.

Yet, ecosystems do not have similar feedback mechanisms to maintain an optimum state, hence, members of the ecosystem (unlike organs in a body) do not work together for the health of the system (Scrimgeour, *et. al.*, 1997). Ecosystems are the set of relationships between living and non-living parts which insure the flow of energy and cycling of chemicals necessary for life (Botkin, 1990).

Problems with identifying the boundaries and characteristics of a specific ecosystem make comparisons to other ecosystem-patients difficult, hence, preventing prognostic and treatment predictions based on cumulative experiences. Unable to consistently identify a patient, classify its state of health and make reasonable predictions on its fate, "a physician to the environment" would be hard pressed to apply a modern medical model to ecosystems. Despite these limitations, it may be premature to discard a medical approach to ecosystem health.

An 18th century approach offers several advances. First, the 18th century medical model better describes our state of understanding of ecosystem health. Just as 18th century physicians sought to understand the basic pathophysiology of the circulatory, gastro-intestinal and other body systems through observation of sick patients, the first task of many ecosystem health practitioners had been to spend time in the ecosystems and identify the underlying mechanisms resulting in real or perceived adverse health effects. Understanding that the art and science of ecosystem health is in its infancy, will prevent false hope in the curative capacity of this approach in the immediate future.

Second, 18th century physicians were able to advance their medical knowledge and abilities despite conflicting paradigms of health and imprecise knowledge of the functioning of their patients. On one hand, this should



encourage potential ecosystem physicians frustrated with the philosophical quagmires often encountered in this field. On the other hand, it should remind us that much of medicine was learned through trial and error and that many patients died before new insights into the genesis and control of disease were obtained. Can we afford the same trial and error approach when ecosystems are the patients?

Finally, and perhaps most importantly, a review of the history of medicine shows that our greatest achievements in health have come about from improving or altering our relationhip with our environment. The Sanitary Reform of the 18th century serves as a prime example. Through improvements in water quality, food quality, housing and social support, more gains in human well-being and greater strides in reducing human disease were made than have occurred since. Eighteenth century medical practitioners implicitly applied the teaching of Hippocrates who instructed new physicians that, to know a patient's health, one must know how the patient relates to the world around him.

Applying an Ecological Model to Health – an Alternative Approach?

Understanding how an organism relates to and is affected by its environment is the science of ecology. Although components of an ecosystem may not work together to produce an optimal state of health, it cannot be denied that all components of an ecosystem are linked together at s me level and, hence, their health is inter-related. Just as the health of a cow affects the health of the herd, which in turn affects the health of the farm, farms have effects on the well-being of people working on the farm, people consuming the farm products as well as the general community. Ecological sciences may serve to reveal how farm management can affect human health by studying the interactions with agriculture that determine the distribution and abundance of health and disease in a community.

An ecological model of health contends that health is a product of the interactions between individuals and sub-systems of ecosystems (Green, *et. al.*, 1996). Paying attention to such interactions is nothing new when it comes to investigating and managing health. Ecological perspectives have, perhaps unwittingly, been a part of public health and herd health programs since their inception. No program intent on manipulating or maintaining population health can do so without considering external environmental inputs.

While early efforts at population medicine were almost exclusively concerned with finding the key environmental factor that could be controlled to reduce disease, health promotion programs for people and herd health programs for animals, now focus more on providing environmental, social and economic conditions that allow the population to meet our expectations for health and productivity. An analogous evolution can be seen in forestry. Modern forestry is moving away from harvesting systems which do not consider the ever-changing nature of forest landscapes and our attitudes towards them, to "social forestry" which is not only ecologically-based and biologically-sustainable, but also strives to meet social and environmental expectations and values (Kimmins, 1997).

Increasingly, legislative changes and market concerns, demanding that social, health and environmental issues be addressed, are driving agriculture towards a similar evolution. Knowing how a community relates to its biotic and abiotic environment is not only the basis for population medicine and public health, it is also is becoming a foundation for resource management.

Perhaps, the key to the ecological approach to health is to spend time on identifying how the health of the patient, whether this be the community, the farm or the farmer, is affected by or reflects the interactions it has with other components of the farming ecosystem. Without this understanding, our capacity to predict and prevent adverse health effects arising from agriculture will always be poor.

Experience in more traditional forms of ecology and medicine shows us that most gains or improvements in our knowledge were made by looking at a problem. An

ecological approach to health management should follow the successes of ecology and public health by working to accumulate the insight and experience needed to forge a theoretical base and predictive capacity by trying to solve or prevent health problems. While the use of inter-disciplinary teams in agricultural development is undoubtedly an important step to integrate health and food production, it is perhaps equally important to ensure that, training of health professionals and agriculturists inculcate the Hippocratic idea that man's health is a product of his interactions with the world around him. However, assuring that students and scientists spend as much time in the community and on farms as they do in the laboratory or library, will perhaps be the most important step to increase our understanding of farming and human health dynamics.

Looking at links between agriculture and human health through ecological lens is not without problems. Just as ecosystems are concepts rather than physical entities, health is defined more by social perceptions and desires than it is determined by biological mechanisms. While we may use objective scientific measurements to classify the disease status of a patient, interpretation of these findings typically requires some projection of social expectations or values.

One example is the conflicting interpretation of the available data concerning human health impacts of salmon farming. Proponents of the industry see salmon farming as a means to bolster the socio-economic health of coastal communities and to produce a consistent, high quality food. Meanwhile, critics see the industry as creating environmental impacts that threaten people through drug contamination of wild and farmed seafood, net loss of wild protein for food production and threats to other sustainable coastal industries (Stephen and Iwama, 1997).

The World Health Organization's definition of health as, "a state of complete physical, mental and social well being and not merely the absence of disease or infirmity" highlights the socio-economic characteristic of health. Typically, the biomedical sciences have not served to establish community definitions of health, but instead have worked to try to meet them. Analogously, the role for ecology in linking agriculture and human health is not to define or judge the nature of the relationship. Rather, the role should be to determine if public expectations are achievable and sustainable in the light of the current set of inter-relationships and to identify management practices that could allow the agroecosystem to meet social demands and expectations for individual, community and environmental health.

Another major limitation to the ecological approach is complexity. Ecosystems are complex, dynamic systems in which small changes can result in unanticipated effects (Schaffer and Kot, 1986). Each system that we examine is imbedded in another system and each farm is unique in terms of its precise sets of interactions.

Thus, it becomes difficult to select the exact set of observations in time or space upon which we would choose to base system-level management decisions. Some authors have advocated that systems theory be used as a means to address complexity and dynamic interactions between systems (Green, *et. al.*, 1996). An alternative is to apply sound principles of ecology and epidemiology to studies of health-agriculture interactions. Such approaches strive to understand the interactions affecting the problem we are concerned with so as to identify the key components of the system. These components can be manipulated to reduce or prevent adverse health effects and to reduce the likelihood that our management plans result in unanticipated or undesired effects. It acknowledges that we do not manage ecosystems, but we do manage our interactions with them (Kay and Schneider, 1994).

Conclusion

Agriculture and medicine have both been confronted with unwelcome surprises in recent years. The use of pesticides has exacerbated some pest problems, the development of high-yield crops in one region resulted in social inequities in others and emerging infectious disease have had severe impacts on trade and economies (Levins, 1995a). Levins (1995b) suggested that to be prepared for surprises, health sciences must:

- improve predictive capacity by studying health problems in a socio-ecological framework;
- improve our ability to detect and respond to new problems through inter-disciplinary collaborations between the sciences and with the public;
- reduce the vulnerability of populations and systems to change by maintaining adaptable and healthy environments; and
- try to prevent new problems by expanding prevention programs into an enlarged ecosystem to influence events before they result in undesired health impacts.

To do so requires an understanding of how health is affected by the world around us.

Ecological investigations are generally of three types:
1. describing the distribution and abundance of various organisms;
2. determining the dynamic responses of populations or communities to immediate factors of their environment; and
3. uncovering the historical reasons that resulted in the particular system we see now (Kimmins, 1997).

To date, our attempts to integrate health and agriculture through an ecological approach have failed to fully address this spectrum of ecological investigation. While we have described a variety of adverse health effects and developed hypotheses as to how system changes have resulted in these effects, we have spent little time uncovering how our interactions with agriculture and agriculture's interactions with the environment affect or reflect public health.

Defining a healthy agroecosystem as one that produces safe and available food while ensuring ecological sustainability and human health requires that science and society work together to address such concerns. This undoubtedly will lead to links between various scientific communities, with stakeholders and with the general community, facilitating understanding and improving decision-making capacity. Yet, an ecological approach, regardless of its theoretical value, will not evolve if it remains stuck in philosophical debates rather than being applied to improve the lot of farmers and the general well-being of society and our environment. Early efforts to adapt ecosystem approaches to resource management have often focused on the goal of identifying characteristics of healthy ecosystems, but have often forgotten to consider how the health of ecosystem components, including people, are affected by ecological interactions.

People are typically seen as risk factors, catalysts of environmental degradation rather than victims or benefactors of ecosystem change. If we are to view farming as ecosystem management, we must acknowledge that people are the key driver of the ecosystem that can affect or be affected by management practices. It is my contention that, to improve our ability to predict human health effects of future agricultural practices, significant efforts must be applied to find and evaluate the links between people and the environment they share with agricultural production systems. This begins with solving agriculture - related health problems in an integrated fashion.

Some people would look at recent gains in productivity and conclude that past agriculture management practices have increased yield, increased wealth and, thus, increased community well-being. Others would argue that recent management practices that supported gains in efficiency have resulted in degraded natural environments, expanding social inequities in agriculture communities and hence, a decline in community health. Regardless of the viewpoint, there is a growing acknowledgment that humans, animals and the environment make up a farming community and that altering the health of one component can affect the health of others. Agriculture, managed to promote human health, must strive to understand these relationships.

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Source:
Craig Stephen, Director, Centre for Coastal Health Assistant Professor, Health Care and Epidemiology, University of British Columbia. IDRC Program Initiatives: Ecohealth. 1997.

Emissions, Waste and Natural Resource-Use

The table below shows the types of emissions to air, water and soil made by selected sectors whose activities have significant routine environmental impacts. They include industries producing chemicals, paper and pulp, cement, glass and ceramics, iron and steel, non-ferrous metals and leather, and those involved in refining and processing petroleum.

The following factors determine the type and level of industrial emissions:

- type and amount of product manufactured and manufacturing process used;
- type, amount and content of raw materials used;
- use of energy, water and air;
- size of the facility;
- amount of toxic materials stored on the site; and
- quality and efficiency of abatement technology (if used).

Another set of factors relates to the human exposures that can result from industrial emissions and includes:

- surrounding environmental conditions (rivers, wind, soil conditions, etc.); and
- location of human settlement, vis-á-vis industrial operation.

Source:
Health and Environment in Sustainable Development, Chapter 3: Human Activities and Environmental Quality, pp. 63-65. World Health Organization-Geneva. 1997.

Table 1. Overview of Significant and Potential Environmental Impacts by Industrial Sectors

Sector	Air	Water	Soil/Land
Chemicals (industrial inorganic and organic compounds, excluding petroleum products)	■ Many and varied emissions depending on processes used and chemicals manufactured ■ Emissions of particulate matter, SO_2, NO_x, CO, CFCs, VOCs and other organic chemicals, odors ■ Risk of explosions and fires	■ Use of process water and cooling water ■ Emissions of organic chemicals, heavy metals (cadmium, mercury), suspended solid, organic matter, phenols, PCBs, cyanide water-quality effects ■ Risk of spills	■ Chemical process waste disposal problems ■ Sludges from air and water pollution treatment disposal problem
Paper and pulp	■ Emissions of SO_2, NO_x, CH_4, CO_2, CO, hydrogen sulphide, mercaptans, chlorine compounds, dioxins	■ Use of process water ■ Emissions of suspended solids, organic matter, chlorinated organic substances toxins (dioxins)	
Cement, glass, ceramics	■ Cement emissions of dust, NO_x, CO_2, chromium, lead, CO ■ Glass emissions of lead, arsenic, SO_2, vanadium, CO, hydroflouric acid, soda ash, potash, speciality constituents (e.g., chromium) ■ Ceramics emissions of silica, SO_2, NO_x flourine compounds	■ Emissions of process water contaminated by oils and heavy metals	■ Extraction of raw materials ■ Metals soil contamination and waste disposal problems
Mining metals and minerals	■ Emissions of dust from extraction, storage and transport of ore and concentrate	■ Contamination of surface water and groundwater by highly acidic mine water containing toxic metals (e.g., arsenic, lead, cadmium).	■ Major surface disturbance and erosion ■ Land degradation by large slag heap

Table 1... continued

Sector	Air	Water	Soil/Land
	■ Emissions of metals (e.g., mercury) from drying of ore concentrate	■ Contamination by chemicals used in metal extraction (e.g., cyanide)	
Iron and steel	■ Emissions of SO_2, NO_x, hydrogen sulphide, PAHs, lead, arsenic cadmium, chromium, copper, mercury, nickel, selenium, zinc, organic compounds, PCDDs/PCDFs, PCBs, dust, particulate matter, HCs, acid mists ■ Exposure to ultraviolet and infrared radiation, ionizing radiation ■ Risks of explosion and fires	■ Use of process water ■ Emissions of organic matter, tars and oil, suspended solids, metals, benzene, phenols, acids, sulphides, sulphates, ammonia, cyanides, thicyanates, thiosulphates, flourides, lead, zinc (scrubber effluent) water-quality effects	■ Slag, sludges, oil and grease residues, HCs, salts, sulphur compounds, heavy metals soil contamination and waste disposal problems
Non-ferrous metals	■ Emissions of particulate matter, SO_2, NO_x, CO, hydrogen sulphide, hydrogen, hydrogen flouride, chlorine, aluminum, arsenic, cadmium, chromium, copper, zinc, mercury, nickel, lead, magnesium, PAHs, flourides, silica, manganese, carbon black, HCs aerosols	■ Scrubber water containing metals ■ Gas-scrubber effluents containing solids, flourine, HCs	■ Sludges from effluent treatment, coatings from electrolysis cells (containing carbon and flourine); soil contamination and waste disposal problems
Coal mining and production	■ Emissions of dust from extraction, storage and transport of coal ■ Emissions of CO and SO_2 from burning slag heaps ■ CH_4 emissions from underground formations ■ Risk of explosions and fires	■ Contamination of surface water and groundwater by highly saline or acidic mine water	■ Major surface disturbance and erosion ■ Subsidence of ground above mines ■ Land degradation by large slag heaps
Refineries, petroleum products	■ Emissions of SO_2, NO_x, hydrogen, sulphide, HCs, benzene, CO, CO_2, particulate matter, PAHs, mercaptans, toxic organic compounds, odors ■ Risk of explosions and fires	■ Use of cooling water ■ Emissions of HCs, mercaptans, caustics, oil, phenols, chromium, effluent from gas scrubbers	■ Hazardous waste, sludges from effluent treatment, spent catalysts, tars
Leather and tanning	■ Emissions including leather dust, hydrogen sulphide, CO_2, chromium compounds	■ Use of process water ■ Effluents from the many toxic solutions used, containing suspended solids, sulphates, chromium	■ Chromium sludges

Source:
Stannels and Bourdeau. 1995; World Bank. 1997.

Toxic / Hazardous Chemicals and Wastes

There are various kinds of hazardous wastes. Some are highly inflammable – as in many solvents used in the chemical industry while some are highly reactive – and can explode or generate toxic gases when coming into contact with water or some other chemical.

Some have disease-causing agents: sewage sludge or hospital wastes often contain bacteria, viruses and cysts from parasites. Some wastes are lethal poisons – cyanide, arsenic and many heavy metal compounds; many are carcinogenic (i.e., cancer inducing). *Table 1* gives some examples of toxic chemicals, their use and their potential health impacts.

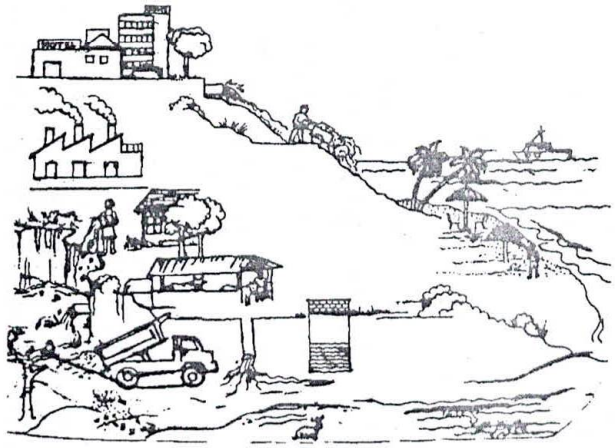
Table 1. Toxic Chemicals, Their Use and Their Potential Health Impacts

Chemical	Use	Health Problems
Arsenic	Pesticides; some medicines; glass	Toxic; dermatitis, muscular paralysis, damage to liver and kidney; possibly carcinogenic and teratogenic
Asbestos	Roofing insulation; air conditioning conduits; plastic; fiber; paper	Carcinogenic to workers and even to family members
Benzene	Manufacture of many chemicals; gasoline	Leukemia; chromosomal damage in exposed workers
Beryllium	Aerospace industry; ceramic parts; household appliances	Fatal lung disease; lung and heart toxicity
Cadmium	Electroplating; plastic pigments; some fertilizers	Kidney damage; emphysema; possibly carcinogenic, teratogenic and mutagenic
Chromates	Tanning; pigments; corrosion inhibitor; fungicides	Skin ulcers; kidney inflammation; possibly carcinogenic; toxic to fish
Lead	Pipes; some batteries and paints; printing; plastics; gasoline additive	Intoxicant; neurotoxin affects blood system
Mercury	Chloralkali cells; fungicides; pharmaceuticals	Damage to nervous system; kidney damage
PCBs	Electric transformers; insulator electric equipment	Possibly carcinogenic; nerve, skin and liver damage
Sulphur dioxide	Sugar; bleeding agent; emissions from coal/some oil combustion	Irritation to eyes and respiratory system; damage to plants and buildings
Vinyl chloride	Plastics; organic compound synthesis	Systematically toxic; carcinogenic

Source:

Krishanamurthi, CR Toxic Chemical in State of the Environment: Some Aspects, National Committee of Environmental Planning, New Delhi quoted in G. Anandalingam and Mark Westfall (1987) "Hazardous Waste Generation and Disposal: Options for Developing Countries, Natural Resources Forum. Vol. 1, No. 1.

Hazardous Wastes: Sources and Control



How is Waste Defined in the Basel Convention?
Wastes are substances or objects which are disposed of or are intended to be disposed or are required to be disposed by the provisions of national law.

What is Meant by Hazardous Waste in the Basel Convention?
First, rather than adopting one definition of hazardous waste, the Convention takes a broad view that there are 45 categories of wastes that are presumed to be hazardous in the Convention. Eighteen of them are waste streams (i.e., clinical wastes, mineral oils, PCB). Almost 27 others are wastes having clearly-identified constituents (i.e., mercury, lead, asbestos, organic cyanides, halogenated organic solvents). However, in order to be classified as hazardous, these categories of wastes need to exhibit one or more hazardous characteristics, such as being flammable, oxidizing, poisonous, infectious, corrosive, ecotoxic. Secondly, if a waste is considered hazardous by the national legislation of the Party of export, import or transit, it will be considered hazardous for the purpose of transboundary movement by all States involved.

Since the beginning of the century, the world has experienced unprecedented industrialization and economic growth.

New discoveries, techniques and technologies formed a basis for accelerated development in the chemical field. Synthetic fibers such as nylon and terylene for use in various kinds of textiles; plastics such as PVC and polythene for use as packing material, in furniture and in cars; insecticides, herbicides and other pesticides; an array of new pharmaceuticals, and many other chemically-based new products came into widespread use. In addition, many new chemicals were processed, synthesized and used in industry. In homes, the use of new detergents, types of paints and other household chemicals marked the beginning of a new era.

At the same time, the harmful effects of wastes on human health and on the environment generated by producing and consuming industrial and agricultural goods have become increasingly striking. Industry and mining are the main sources of hazardous wastes, particularly in industrialized countries. The generation of hazardous wastes is not confined to large-scale industrial plants, as small-scale industry, small workshops, garages and very small production units collectively produce large and diverse quantities of hazardous wastes.

Furthermore, transport services; hospitals, research laboratories, public buildings, military establishments and even households are often the identified sources of highly-dangerous materials. Within the industrial sector itself, the chemical industry is by far the main source of hazardous wastes. In developing countries, small-scale industry is an important source of ill-defined heterogeneous quantities of hazardous waste.

One of the most difficult environmental challenges the world faces is the hazardous waste: large quantities of waste generated with more and more complex chemical structures.

There are more than 400 million metric tons of hazardous wastes generated each year worldwide. Some 10% of these wastes cross national frontiers. Stockpiles of corrosive acids, organic chemicals, toxic metals and other wastes pose acute, long-term health and ecological threats, causing groundwater contamination, leaching and other types of pollution.

For economic reasons, large volumes of hazardous wastes are exported from industrialized countries to developing countries as well as to Eastern and Central Europe where the disposal costs are lower. Unfortunately, a number of

these countries lack environmentally-sound waste disposal management schemes. In developing countries, future action in minimizing and managing hazardous wastes is required because the capabilities and capacities of these countries in disposal, monitoring and enforcement are quite weak. Another major problem is the scarcity of sources that could be allocated to sound hazardous waste management practices. Transboundary movements of hazardous wastes have become a global problem, demanding global solutions. In developing countries, front-line measures are urgently required to cope with existing problems due to hazardous waste generation.

What is Meant by Transboundary Movement?

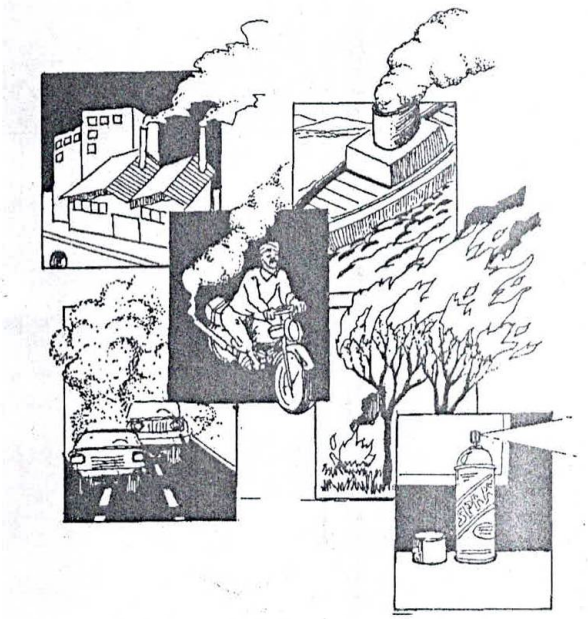
Transboundary movement means any movement of hazardous wastes or other wastes from an area under the national jurisdiction of one State to or through an area under the national jurisdiction of another State or to or through and area not under the national jurisdiction of any State, provided at least two States are involved in the movement.

What is Environmentally-sound Management?

According to the Basel Convention, environmentally-sound management of hazardous wastes or other wastes means "taking all practicable steps to ensure that hazardous wastes and other wastes are managed in a manner which will protect human health and the environment against the diverse effects which may result from such wastes.

Source:
The Basel Convention, The Global Solution for Controlling Hazardous Wastes. United Nations Environmental Programme – New York and Geneva. 1997.

Chemical Pollutants: Its Hazards to Human Health



Chemicals Found in Food and Water

- Lead (in food and drinking water, especially where there is a combination of lead water pipes and acidic water);
- Aflatoxins and other natural food toxicants;
- Nitrates in drinking water (and their conversion into nitrites in the body);
- Trace pollutants in water supply, many from the agro-chemicals (for instance various halogenated organic chemicals);
- Aluminum (food and drinking water); and
- Arsenic and mercury.

Chemicals Commonly-Found in the Indoor Environment (Home/Workplace)

- Carbon monozide (incomplete combustion of fossil fuels);
- Lead (paint ingested by children);
- Asbestos (usually from roofing insulation or air conditioning conduits);
- Smoke from combustion of coal and wood (or other biomass fuel);
- Tobacco smoke;
- Potentially-dangerous chemical used without health and safety safeguards (by home-workers and in occupational setting); and
- Formaldehyde (mostly from insulation; also some wood preservatives and adhesives).

Chemicals Found Outdoors in Urban Areas in the Air (Ambient)

- Lead (exhausts of motor vehicles using gasoline with lead additive, from external paint, some industrial emissions);
- Sulphur dioxide, sulphates and smoke/suspended particulates (mainly from coal or heavy oil combustion by industries, power stations and, in some cities, households);
- Oxides of nitrogen (in most cities, mostly from motor vehicle emissions, also some industries);
- Hydrocarbons (motor vehicles, petrol stations, some industries);
- Ozone (secondary pollutant formed by reaction of nitrogen dioxide and hydrocarbons in sunlight);
- Carbon monoxide (incomplete combustion of fossil fuels, mostly by motor vehicles); and
- VOCs (Volatile Organic Compounds) that are, or may be, hazardous.

Chemicals Which May Contaminate Land Sites

- Cadmium and mercury compounds and other heavy metal compounds (industrial wastes);
- Dioxins, PCBs, arsenic, organochlorine pesticides (industrial wastes); and
- Micro pollutants (both indoor and outdoor); mixture each at trace level (with possible additive effects).

Source:
The Environment for Children, United Nations Children's Fund (UNICEF). 1996.

Air Pollution and its Costs

On cold days in Delhi, India, the poor light bonfires of tires, trees and rags whose fumes mix with the exhaust from the city's two million vehicles, form a thick smog. On most days in Mexico City, a blanket of pollution cuts off views of the surrounding mountains. On one famous occasion, it got so bad that birds fell dead out of the sky onto the Zocalo, the city's main square. Throughout the developing world, smogs in many big cities are getting worse as more people use cars and more manufacturing firms belch out pollution. Congestion is on the rise too: according to one estimate, a car in Bangkok now spends the equivalent of 40 days a year stuck in traffic. The air in Asia's cities, like the water in its rivers, is particularly unhealthy, containing levels of dust and smoke several times higher than in the rich countries' cities.

Environmentalists in the developed world also worry about air pollution in poorer countries, not just out of the goodness of their hearts but because they fear it may affect their own backyard. Carbon dioxide emissions, thought to be the cause of global warming, are growing particularly fast in developing countries. So are the emissions of sulphur dioxide, blamed for acid rain, which sometimes falls hundreds of miles from the source of pollution.

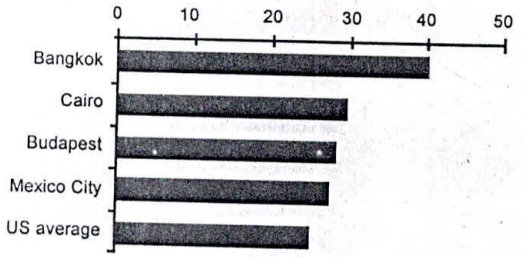
But the harm that air pollution causes in developing countries is much more serious and immediate. The biggest causes for concern are indoor air pollution, lead emissions and small particles. Indoor air pollution in poor countries is not much talked about, but it is often as damaging to health as smoking cigarettes.

Around a third of the energy consumed in developing countries comes from wood, crop residues and dung, which are often burnt in poorly-designed stoves within ill-ventilated huts. Studies of women in India and Nepal exposed to smoke from such fuels show that their death rates from chronic respiratory disease are similar to those of heavy smokers.

Lead has long been known to be dangerous in large doses. Some historians have argued that its use in piping and amphorae in ancient Rome caused many emperors to go mad, accelerating the collapse of the Roman empire. But

Leaden Air

Average blood lead levels of sampled population in selected cities early 1990s, micrograms per deciliter



Source: World Bank

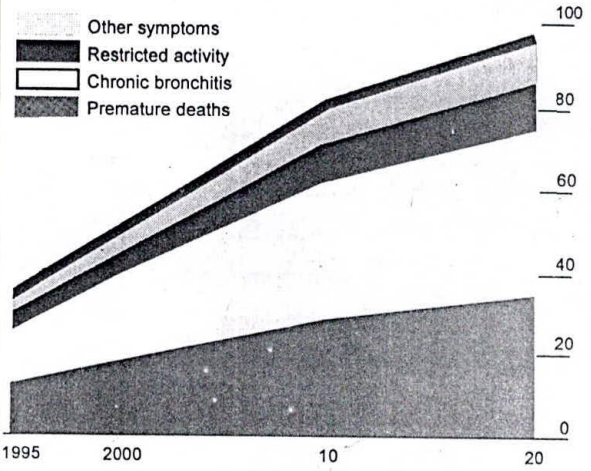
only since the 1970s have scientists been aware that relatively small quantities of lead in the bloodstream can be harmful to humans. In particular, many studies show a correlation between levels of lead in children's blood and lower IQ scores, hearing loss and hyperactivity. In cities in developing countries, people breathe-in lead from air, polluted by burning leaded petrol.

But the kind of air pollution that causes the most damage to human health in developing countries is from small particles (of less than 10 microns in diameter, known as PM10). Caused by vehicle exhausts, coal-burning smoke from factories and dust stirred up by vehicles, these particles easily find their way into people's lungs. Although doctors disagree about the precise mechanism by which they cause illnesses, studies have shown a strong positive correlation between levels of PM10 in the air and death rates.

Together, these pollutants impose a big toll. The World Bank estimates that in China, which probably has the dirtiest air in Asia, air pollution in 1995 caused 178,000 premature deaths among city dwellers and 1.7 million cases of chronic bronchitis. The bank puts the total economic costs of this damage at $32 billion, or almost 5% of the

Clearing the air can be politically tricky, but need not cost a lot.

Gasping
Health costs* of urban air particulate pollution
1995, $bn



* Social costs of mortality and morbidity due to exposure to PM10

Source: World Bank

country's GDP. Similarly, preliminary estimates of the cost from last year's smog across Southeast Asia suggest that for some of the countries affected, it may exceed 2% of GDP.

Indoor air pollution is inextricably linked with poverty and should, therefore, become less of a problem as living standards rise and families can afford to switch from dung and wood to cleaner fuels such as kerosene, liquid petroleum gas and, cleanest of all, electricity. Energy in developing countries, like water, is often heavily-subsidized; in the early 1990s, the average price paid for electricity by consumers in these countries was four cents per kilowatt hour, when it costs an average of about 10 cents to produce. The usual argument for such subsidies is that they make electricity affordable for poorer people and thus, improve their lives. But first, new consumers need to be connected to the grid, and in developing countries, that privilege is largely reserved for the urban middle classes, who live in places where such luxuries are available.

In practice, therefore, subsidies are not as helpful to the poor as it is claimed. At the same time, they put a heavy burden on public spending and they encourage the profligate use of power. So reducing subsidies and raising prices, although politically difficult, is a cheap and effective way of preventing waste. In recent years, many developing countries have been moving in that direction. In Russia and Eastern Europe, manufacturing firms once kept going by subsidized energy, have been allowed to collapse; and in China, energy intensity (the energy consumed per unit of GDP) has dropped by 50% since 1980. Even so, energy subsidies in developing countries remain high.

Another cheap, effective and politically less contentious anti-pollution policy is for governments to phase out lead in petrol or at least encourage drivers to use unleaded fuel by imposing lesser taxes. Typically, it costs between one or two cents per liter of petrol to modify refineries to produce that unleaded sort. Although some drivers fret that unleaded fuel might damage their car engines, the effect is negligible. In recent years, many developing countries, including Mexico and Thailand, have copied rich countries in reducing or phasing out lead in petrol; but others have not. In Africa and the Middle East, fuel with very high lead content is still widely used.

In big Asian cities, motorcycles and three-wheelers account for much of the growth in vehicles because they are cheaper than cars; but they emit huge amounts of small particles and smoke. A cheap solution would be for governments to make four-stroke engines on these bikes compulsory, or at least encourage their use. Four-stroke engines are cleaner, and although they cost more (putting off many would-be users), they cost less in the long run because they are cheaper to maintain and need less fuel. Thailand, persuaded by these arguments, is phasing out vehicles with two-stroke engines.

Source:
The Economist. 21 March 1998.

Indoor Air Pollution: "Rule of One Thousand"

Indoor air pollution can be particularly hazardous to health because it is released in close proximity to people. The "rule of 1000" states that pollutant released indoors is 1000 times more likely to reach people's lungs than a pollutant released outdoors.

The major source of indoor air pollution in developing countries is household use of biomass and coal for heating and cooking, usually involving open fires or stoves without proper chimneys. Pollutant concentrations can be extremely high, exceeding WHO guidelines by more than a factor of 100. Women and children are affected most. It has been estimated that as many as 1000 million people, mostly women and children, are regularly and severely exposed to such concentrations (WHO, 1992f).

In addition to fumes from combustion, indoor pollutants originate from building materials, paints, solvents used in the home and environmental tobacco smoke. Indoor air quality is also affected by outdoor pollution sources. Principal pollutants and their sources are given in *Table 1.*

Table 1. Principal Pollutants and Sources of Indoor Air Pollution, Grouped by Origin

Principal Pollutants	Sources of Air Pollution
■ SO_2, SPM/RSP	**Predominantly outdoor**
■ O_3	■ Fuel combustion, smelters
■ Pollens	■ Photochemical reactions
■ Pb, Mn	■ Trees, grass, weeds, plants
■ Pb, Cd	■ Automobiles
■ VOC, PAH	■ Industrial emissions
	■ Petrochemical solvents, vaporization of unburned fuels
■ NO_x, CO	**Both indoor and outdoor**
■ CO_2	■ Fuel burning
■ SPM/RSP	■ Fuel burning, metabolic activity
■ Water vapor	■ ETS, resuspension of dust, condensation of vapors and combustion products
■ VOC	■ Biological activity, combustion, evaporation
■ Spores	■ Volatization, fuel burning, paint, pesticides, insecticides, fungicides
	■ Fungi, molds
■ Ra	**Predominantly indoor**
■ HCHO	■ Soil, building construction materials, water
■ Asbestos	■ Insulation, furnishing, ETS
■ NH3	■ Fire-retardant, insulation
■ Polycyclic hydrocarbons, arsenic, nicotine, acrolein	■ Cleaning products
■ VOC	■ ETS
■ Hg	■ Adhesives, solvents, cooking, cosmetics
	■ Fungicides, paints, spills or breakages of Hg containing products
■ Aerosols	■ Consumer products, house dust
■ Allergens	■ House dust, animal dander
■ Pathogenic organisms	■ Infections

Source:
Health and Environment in Sustainable Development, Chapter 4: Environmental Quality, Exposures and Risks, pp. 84-85. World Health Organization-Geneva. 1997.

Acute Respiratory Infection

Air Pollution and ARI

Both indoor and outdoor air pollution have been associated with increased childhood morbidity and mortality. While the precise physiological mechanism is unclear, exposure to air-borne particulate matter has been found to be especially significant. Epidemiologic studies have associated particulates with reductions in lung function, exacerbation of pre-existing asthma, emergency room visits, hospitalization, acute bronchitis and non-specific mortality. In addition, mortality from childhood pneumonia appears to be related to particulate exposure.

Outdoor sources of particulates include motor vehicle exhaust, industrial activities, power generation, open burning of solid waste, construction and related activities, and resuspension of deposited dusts. Indoor exposures to particulates are greater concerns than those outdoors, because concentrations are often much higher indoors and the greater time spent indoors by vulnerable population sub-groups, including young children.

Acute respiratory infection(ARI), which includes upper respiratory infections such as colds and sore throats, and lower respiratory infections such as pneumonia and bronchiolitis, is the most important single cause of mortality in developing countries. Among children less than five years old in developing countries, 28% of deaths are associated with ARI. The presence of ARI can also increase mortality from measles, malaria and other diseases.

According to the World Health Organization (WHO) International Study Group on Indoor Air Pollution and Childhood Pneumonia, there are six potential intervention areas to reduce morbidity and mortality from ARI among children under five years of age:

1. case management and chemoprophylaxis (e.g., of severely malnourished children or high-risk neonates);
2. immunization (e.g., new vaccines for pneumococcus);
3. improving nutrition (e.g., encouraging breastfeeding);
4. reducing transmission of pathogens (e.g., reducing crowding);
5. improving childcare practices (e.g., promoting effective care-seeking behavior); and

Indoor exposures to particulates are of greater concern than those outdoors, because concentrations are often much higher indoors and the greater time spent indoors by vulnerable population subgroups, including young children.

6. reducing environmental pollution of the indoor and ambient air (Kirkwood et al., 1995).

This last intervention is within the purview of environmental health.

Using a methodology described in Kirkwood, *et al.* (1995), WHO has calculated the potential impacts on mortality from ARI from these interventions (Bruce 1996). According to these calculations, a 20% reduction of indoor air pollution from biomass combustion could reduce mortality from ARI by 4.3% to 7.8%; a 60% reduction could yield decreases in mortality ranging from 13.0% to 19.5%. These estimates compare favorably with the expected impact of other types of interventions, such as reducing the incidence of low-birth-weight babies by 20% (expected reduction in mortality = 2.6% to 6.7%); or achieving a rate of 60/55/50 in the three-dose vaccination for pneumococcus (expected reduction in mortality = 7%). Additional research on indoor air pollution and ARI looks at links between this risk factor and the cause of childhood morbidity and mortality.

Indoor Air Pollution Reduction Interventions

Half of the world's households use biomass fuels for cooking and space heating, according to estimates from Smith (1990). Incomplete combustion of these fuels, principally wood, crop residues and dried animal manure in inefficient stoves or open fires releases significant indoor air pollutants, especially suspended particulates and carbon monoxide. The hazards from these emissions are compounded by poor ventilation in kitchens, where women combine the tasks of cooking and child care.

Among children less than five years old in developing countries, 28% of the deaths are associated with ARI. The presence of ARI can also increase mortality from measles, malaria and other diseases.

Designing appropriate interventions to reduce indoor air pollution from cooking and heating stoves calls for an understanding of the fuels used, the use to which they are put, the combustion conditions, housing patterns, temporal and spatial behavior of the population, socio-economic conditions and physiological status of the population. Intervention options include the following:

- Use cleaner fuels – move up the energy ladder
- Lower emissions – use more fuel-efficient stoves
- Lower household concentration – improve ventilation
- Lower exposure – improve kitchen design, change behavior

Of these, improved stoves, ventilation and behavior change are the most feasible for the household and community level.

Improved stoves are already available. However, most are designed with fuel-efficiency, rather than improved health, as a goal. No studies have been carried out regarding the health impact of an improved stove. WHO is coordinating such a study in Guatemela, but it is still in the planning stages.

Improving ventilation is another option. But it is not possible to increase ventilation enough to make an appreciable difference in the concentrations of particulate matter indoors.

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Behavior Change

Behavioral change interventions to reduce indoor air pollution from stoves have not been adequately explored as to their feasibility and cultural appropriateness. Possible interventions include keeping children away from cooking areas, moving the cooking stove outside, changing kitchen design, and sharing cooking and child care so that children are kept out of smoky areas. Educational programs that convey an understanding of the connection between exposure and disease will likely be a part of the package. Field tests are needed in this area.

Ambient Air Pollution Reduction Interventions

Reducing exposure to particulate matter in ambient air depends heavily on technological, institutional and policy interventions, such as control of stationary sources of emissions, conversion to cleaner fuels, improvements in vehicle fleets, the use of catalytic converters, and discontinuing the use of diesel-fueled buses. Nevertheless, some community-and household-level interventions are feasible. These include banning open burning of solid wastes and agricultural refuse, street sweeping, and keeping children from being too active on high-pollution days. The latter depends upon the presence of an air quality monitoring and health advisory system – something that most developing countries do not have yet.

Source:
Environmental Health Project, Applied Study No. 3, Prevention: Environmental Health Interventions to Sustain Child Survival. USAID-Washington. Revised February 1997.

Lead Contamination of the Food Chain

Contamination of crops from lead pollution is often serious in the vicinity of major roads. Grasses and vegetables growing within 50 meters of major roads in industrialized countries typically contain up to 200 times and five to 20 times more lead (Pb), respectively, than at non-roadside sites. The figures of grasses are of the order 50 - 400 parts per million (ppm) Pb (dry weight) and for vegetables, 25 - 100 ppm. Most Pb in grass and cereal leaves near roadsides is derived from the atmosphere, though soil splash during rainfall may be an important source of contamination. The lead content is higher during winter.

Lead in Crops

These roadside effects are very localized, however, and are much less important for agriculture than the impact of contamination from mines and smelters. In an experiment in which soil Pb was held constant, concentrations in bean and lettuce leaves rose with increasing Pb in the air, but there was no change in tomatoes, carrots or potatoes. Grass species with hairy leaf surfaces also tend readily to take up atmospheric lead. Age of the plant is also important. Young wheat plants near a lead smelter in the UK obtained more Pb from atmospheric deposition than from the soil, while for mature plants it was the reverse. The probable reason is that young plants have a higher proportion of surface area.

Lead and Livestock

Livestock readily take up lead. Blood lead content is generally higher in animals grazing in contaminated sites; in sheep along UK roads, blood Pb is more than four times that of animals from uncontaminated regions.

Similarly, blood Pb in cattle from heavily-contaminated farms (soil 1000 - 2000 ppm) was 30 µg / 100 ml compared with 10 µg / 100 ml on farms with low contamination (100 – 200 ppm).

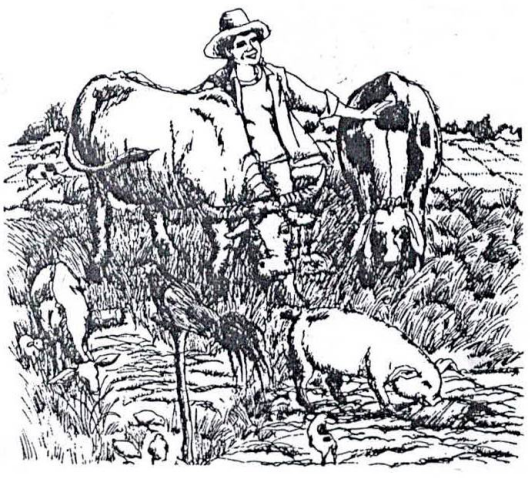
However, few cases of acute poisoning of livestock result from grazing contaminated forage. In cattle, soil constitutes some 1 - 10% of total dry matter intake, though for sheep, which graze closer to the ground, this can rise to 30%. Soil ingestion is greatest in winter months and early spring, or during very dry summers, when grass is in short supply.

A more acute hazard to livestock may come from contaminated feed imported onto the farm. In late 1989, feed compounded in the Netherlands was so contaminated with lead that cattle in some 1,500 farms west of England and 330 in the Netherlands were poisoned, causing the deaths of at least 90 animals in the two countries. Marketing of meat and milk from English farms was restricted and some 1.3 million liters of milk were destroyed daily. The source of lead was rice bran, originating clean from Burma, but becoming contaminated on board ship. Despite orders for its destruction, the bran somehow reached the compounding firm and the feed produced contained up to 1,500 ppm of lead.

Finally, livestock are frequently poisoned when they chew or lick fences or gates or other surfaces that have been covered with paints containing lead. Young animals are more likely to do this, and for them, the risk of lead poisoning is probably higher from this source than from contaminated soil or forage.

Lead in Human Diets

Even if crop plants and livestock taking up lead are not adversely affected, high levels of lead may get into food for



human consumption. For most people, food and drink form the major pathway for Pb uptake, though in extreme cases, this can be via inhalation of high Pb air derived from petrol and industrial emissions. On the average, 60% - 70% of ingested and inhaled lead are derived from food, but not all the lead originates from the field. Food can be contaminated during processing, from the widespread use of Pb solder in cans or from using contaminated water.

Not all this ingested or inhaled lead is absorbed into the body. In adults, only some 50% is absorbed from the lungs and 10% from the gut, although these rates rise to about 70% and some 50% respectively in young children. Once inside the body, most inorganic Pb becomes attached to red blood cells before distribution to other organs. It accumulates eventually in the bones where it is mostly isolated and inert. However, there is evidence of a slow transfer back to other organs, with serious toxic effects.

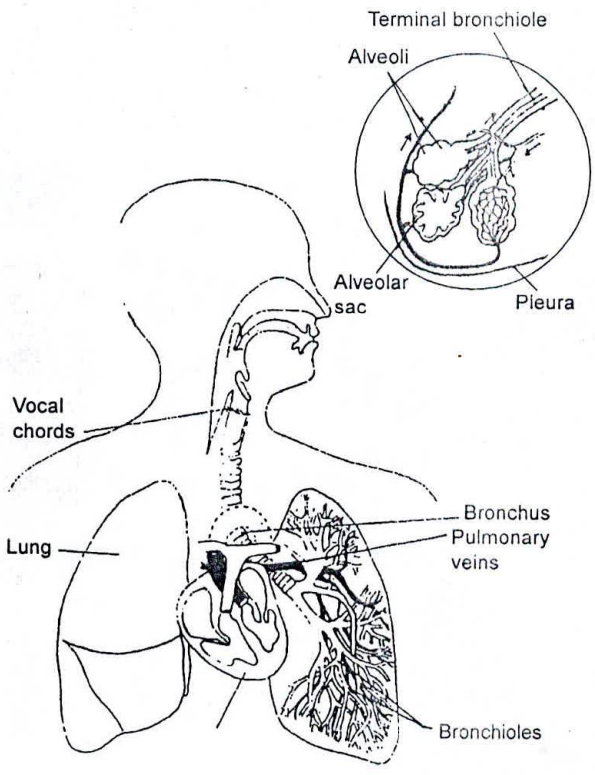
In general, blood lead levels are higher in cities compared with rural areas and are even higher in cities with a great deal of traffic. With the recent switch to use unleaded petrol in some industrialized countries, blood Pb levels appear to have declined. In the USA, the decline may also be partly due to the substitution of non-soldered cans as food containers.

Sources:
Gordon Conway and Jules N. Perry. Unwelcome Harvest, 1991.

Byssinosis Among Textile Workers

What is Bysinnosis or Brown Lungs?

Byssinosis or Brown Lungs is a chronic occupational lung disease often observed among workers exposed to cotton dust, flax and hemp dust. Cotton dust present in the air and inhaled by the worker enters the alveoli of the lungs. Alveolis are minute air sacs which make close contact with blood that flows into the lungs. Here, the blood receives oxygen and discharges carbon dioxide. As the cotton dust penetrates the alveoli, it accumulates in the lymphatics (very fine tubes in the central area of the lung). Continuous accumulation of the dust in the lungs damages the alveoli and reduces the capacity to retain oxygen. As the cotton dust accumulation increases, the worker develops brown lungs and suffers from byssinosis. The prevalence of this disease is more common in cotton mixing, blowing, carding, winding, spinning and weaving sections, where the dust level is high.



The Lungs (Schematic diagram)

The main symptoms of byssinosis are cough and phlegm or suptum along with varied types of chest tightness, chest irritation, breathlessness and low fever. The first indications of this disease are occasional chest tightness or respiratory irritation on the first day of the working week. This is commonly known as Monday Sickness. In the second stage, the symptoms are noticed on the first day of every week and by the time the disease reaches the third stage, the patient complains of tightness of the chest and shortness of breath all through the working week. In the final stages of the illness, these symptoms become more acute and that the patient suffers from permanent incapacity because of reduced breathing.

In the final stages, byssinosis cannot be distinguished from chronic bronchitis and asthma, which are non-occupational diseases. Research shows that patients often forget the earlier symptoms and are diagnosed as suffering from some non-occupational, chronic, respiratory disease. Significantly, chest x-rays do not show any changes specific for byssinosis nor they reveal any specific pathology that is any different from those found in chronic bronchitis and asthma. In fact, doctors are often known to wrongly diagnose it as tuberculosis. As a result, the treatment rarely cures the patient, and his/her condition continues to deteriorate.

Source:
Occupational and Environmental Health (PRIA), Volume 3, Number 4. March 1997.

Agent Orange: Its Second Generation Victims in Vietnam

Even after 23 years, the Vietnam War continues to invade the lives of the soldiers who waged the war. Only now, there is no distinction of race or color. Both US and Vietnamese soldiers are suffering because of a chemical – Agent Orange – spayed in Vietnam by the US from 1961 to 1971.

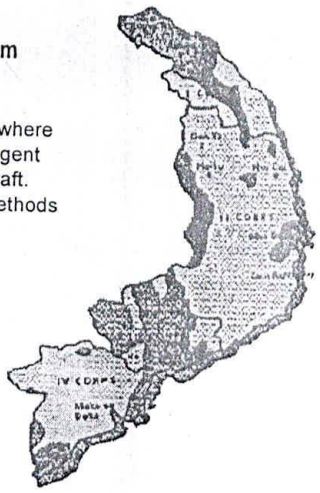
Agent Orange is the name given to a mixture of herbicides, rich in dioxins (hormone disrupters). It is a code name for the orange marker that was used to mark the drums it was stored in. The purpose of the product was to deny forest cover and concealment in dense terrain by defoliating trees and shrubbery where the enemy could hide.

The US had sprayed close to 44 million liters of the herbicide over six million acres in Vietnam during the wartime operation code-named Operation Ranch Hand. Nearly 8.5% of South Vietnam was sprayed at least once. The result is that 14% of South Vietnam's forest was wiped out. Its use was eventually discontinued in 1971.

Today, one in every 100 infants at Tu Du Hospital in Ho Chi Minh City are born without arms and legs, with webbed digits or club-feet. They are all children of people exposed to Agent Orange during the war. The Vietnamese government says Agent Orange has given the nation some 50,000 deformed children and has claimed between 100,000 and a million victims. In the US, thousands of former soldiers are demanding compensation from the US government. They claim exposure to Agent Orange has caused them to suffer numerous ill health effects, including cancer.

A map of Southern Vietnam

The dark areas represent places where the US sprayed Agent Orange from aircraft. Other spraying methods were also used.



According to a Canadian consultancy company, Hatfield Consultants, Ltd., the chemical continues to affect the people through the food chain. After a five-year study, which ranged from satellite imagery to soil sampling, the company concluded that level of dioxins in the blood of Vietnamese born after the war was frighteningly high. This indicated that the contaminants are still active in the food chain. Even in fish and animal tissue, the level of dioxins was found to be very high.

The link between Agent Orange and the reports of cancer and other health problems in people exposed to it has also been confirmed by the Institute of Medicine, USA. The report confirms the earlier finding that there is sufficient evidence of a link to soft tissue sarcoma, non-Hodgkin's lymphoma, Hodgkin's disease and chloracne. It also says there is new "suggestive" evidence to show an association between the neurological disorders in people exposed to agent Orange and congenital birth defect spina bifida in their children.

Doctors at the Tu Du hospital say that cases of congenital defects are higher in areas where the chemical was sprayed. In Ben Tre province in South Vietnam, for instance, it is five times higher than in Ho Chi Minh City.

Tu Du Hospital is the largest hospital in the country. But with no money to invest in research facilities, the hospital is only concentrating on treating its patients. The test to establish the level of dioxin in the blood of a patient costs US$2,000 per head, which the country can ill-afford. "We just have to care for them till they die," says Le Diem Huong, head of the neonatal department.

However, Vietnam has never asked for compensation from the US. It has only sought international help in reclaiming denuded forest lands and aid for the thousands of people suffering from the exposure. There is just one question which the victims are asking themselves now: **will a third generation also fall prey to the chemical?**

Source:
Down to Earth, December 31, 1998.

Pesticide-related Health Problems and Farmworkers

Farmworkers labor under some of the worst conditions of any group of workers in the United States. Farmwork not done by farm owners and their families is largely performed by ethnic minorities, primarily Hispanics of Mexican origin, who may comprise 80-90 percent of the work force. American blacks comprise the next largest group, with a smaller number of Haitians, Filipinos, Vietnamese, Laotians, Koreans, Jamaicans and others. The United States Department of Agriculture (USDA) estimates an annual agricultural workforce of approximately two million hired workers and three million farm owners and their families (unpaid). California, Texas and Florida are the leading states in number of hired farmworkers.

The Workers

Farmworkers are excluded, completetly or partially, from the federal law that protects other workers including: the National Labor Relations Act (which guarantees the right to join a union and bargain collectively); the Fair Labor Standards Act (which governs minimum wage and child labor); and the Occupational Safety and Health Act (which governs standards of health and safety in the work place). Furthermore, most migrant farmworkers are excluded from state laws such as workers' compensation and unemployment insurance.

The Workplace

The USDA defines a farm as a place that sells or could sell $1,000 worth of agricultural products during the year. There are 2,214,429 farms in the U.S., and one billion acres of cropland (excluding pasture and rangeland). The average farm size is 455 acres; however, 14% of farms with the highest income control 50% of the land.

The largest amount of acreage in the U.S. is intended for crops such as corn, wheat, soybeans and cotton, in which cultivating and harvesting is almost completely mechanized. Labor-intensive crops, primarily fruits and vegetables, still require large numbers of workers for hand-cultivating and harvesting.

The agricultural workplace poses many hazards related to the use of tractors, harvesters, ladders, irrigation and other equipment and machinery. Other hazards include heat stress, bee stings, snake bites, dust and airborne allergens.

Pesticide Use in Agriculture

Almost all commercial crops in the U.S. are heavily and repeatedly sprayed with chemical pesticides, the majority of which are toxic materials that pose both acute and chronic health problems. The largest single user of pesticides in the U.S. is agriculture, which, in 1985, accounted for 77% of nationwide usage of 1.08 billion pounds (does not include wood preservatives); and 78% of expenditures of $4.6 billion. In California, where approximately 250 million pounds of pesticides are used annually, 92% is used in agriculture.

Pesticides must be registered with the Environmental Protection Agency (EPA) before they can legally be sold or used in the US. About 1,200 pesticide active ingredients are combined with other so-called "inert" ingredients into approximately 35,000 different commercial products or formulations.

Inert ingredients, which may be as toxic or even more toxic than the pesticide itself, are neither required to be tested for acute and chronic health effects nor listed by name on the

pesticide label. Inert ingredients may compromise 90% or more of a registered pesticide product. However, due to "trade secret" provisions of the Federal Insecticide, Fungicide, Rodenticide Act (FIFRA), the identity of these ingredients cannot be released to the public (even in cases of serious poisoning) by state or federal regulatory agencies.

The pattern of pesticide use in agriculture has changed greatly, with a 175% increase in herbicide use from 25 years ago. Herbicides now represent two thirds of all usage and widely-used herbicides include: alachlor (Lasso), atrazine, 2, 4-D, paraquat (Gramoxone), simazine (Princep), and trifluralin (Treflan).

The use of the less-persistent but more acutely-toxic organophosphate and N-methyl carbamate insecticides has increased with the banning or restrictions of the environmentally-persistent chlorinated hydrocarbons (DDT, aldrin, dieldrin, lindlane chlordane, heptachlor and toxaphene). Widely-used organophosphates include chlopyrifos (Dursban, Lorsban), diazinon (Spectrazide), malathion, parathion, phosdrin, methamidophos (Monitor), and ddvp (Vapona). Widely-used N-methyl carbamates include aldicarb (Temik), carbaryl (Sevin), carbofuran (Furadan), and methomyl (Lannate, Nudrin).

Highly-toxic fumigants such as methyl bromide and D-D (Telone or 1,2-dichloropropane/1,3-dichloropropene) are being used in increasingly large amounts as replacement for DBCP, banned in 1979, and the ethylene dibromide, banned in 1984.

While fungicides represent a small percentage of the total volume of pesticide use, they are important because many are carcinogens and/or teratogens. They are used extensively on fruits and vegetables and may persist as residues in the marketed fresh or processed product. Widely-used fungicides include benomyl, captan, chlorothalonil (Bravo, Daconil), maneb and mancozeb (Dithane).

Environmental Pesticide Exposure

Pesticides are among the few toxic materials deliberately added to the environment. Their use in agriculture is a major source of involuntary exposure of the general public to carcinogens. This is due to the contamination of fresh and processed food by persistent pesticide residues, most of which cannot be washed off or degraded by cooking.

The dominance of chemical pest control in agriculture in the U.S. began in the middle and late 1940s. By the middle of 1950s, evidence of widespread contamination of fish, birds and wildlife by pesticides was mounting. The EPA and other monitoring agencies throughout the world have shown that pesticide contamination is global, including snow caps of the highest mountains and core samples from the arctic ice packs. A recent California study shows that pesticides concentrate in fog.

Humans are contaminated with pesticides, especially the fatty tissue. Breast milk is contaminated with a variety of pesticides, with high levels in the U.S. found in women in the rural south. The highest have been reported in farmworker women in cotton-growing areas in Central America. Many pesticides cross the placenta, and newborn infants are already contaminated at birth.

A problem inherent in current pesticide application technology is drift, or disposal of the pesticide away from the site of application. Only 10% – 15% of applied pesticides actually reach the target pest, with the remaining 85% – 90% dispersed off-target to air, soil and water through drift, runoff, volatization, off-gassing, etc.

Pesticides can drift as far as 50 miles from the site of application, depending on the particle size and wind conditions and be a continuing source of contamination from runoff as well as dust. A dust storm was found to have carried pesticides from Texas to Ohio. Significant concentrations of almost all pesticides applied aerially or by ground rice sprayers can drift up to a mile or more from the site of application, even under the best wind conditions.

Communities in agricultural areas are at risk from pesticide drift, and while some episodes of illness have been reported, the extent of the problem is essentially unknown and undocumented. In 1987, in California, pesticide drift caused three major evacuations of community residents – two from Guthion being used in peach orchards and one from methyl bromide off-gassing from a gladiola field.

Agricultural pesticide use is the major cause of non-point source contamination of groundwater (a non-point source means there is no single identifiable place such as toxic dump, factory sewer line, etc., causing the contamination). Nationwide, 50% of the drinking water supply is from groundwater. In rural areas, it is 90% or more.

Occupational Pesticide Exposure in Agriculture

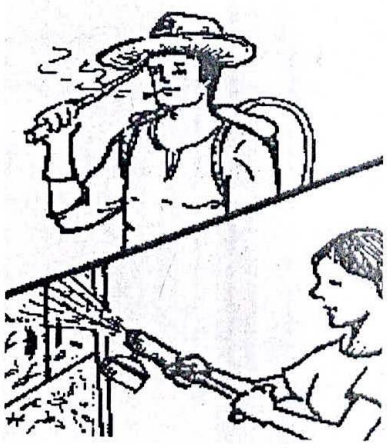
The primary route of pesticide exposure is the skin, and not, as commonly believed, the respiratory system. Fumigants, which are in the form of gases, are a notable exception because of greater toxicity. Pesticides remain persistent on the skin for many months after the last known exposure.

Workers who mix, load and apply pesticides are exposed to the concentrated form of the pesticide. A large number are exposed from the use of ground rig spray equipment. Air blast sprayers, used in nut and fruit groves and orchards, are among the most highly-polluting equipment.

The percentage of pesticides applied by fixed-wing aircraft or helicopters (called crop dusters) is unknown. In California, it is estimated that more than half are applied by such methods. The pilots are less at risk of poisoning than the ground crews who mix and load the pesticide, and especially the flaggers who direct the crop duster from the ground.

Chemigation, or putting the pesticide in the irrigation water, is increasing. Pesticides are also incorporated into the soil (usually granular formulations). In the case of fumigants these are injected into the soil and then trapped with plastic sheeting to minimize loss from off-gassing. Animals are also treated with pesticides, externally through the use of "dips", or in their feeds. Residues of pesticides from such use can then contaminate the meat, milk, eggs, gelatin and other animal products.

Fieldworkers who harvest and cultivate crops are exposed to residues of pesticides, primarily on leafy surfaces (dislodgeable residues), but also on the crop itself or in the soil or duff (decaying plants and organic materials that collect under vines, trees, etc.). Farmworkers are also exposed to pesticides by crop dusting aircraft or ground rig sprayers applying pesticides in the adjacent fields.



The great majority of workers do not know the names of pesticides to which they are exposed or the acute and chronic risks to their health.

Acute Health Effects of Pesticides

Acute health effects of pesticide exposure range from eye and upper respiratory tract irritation and contact dermatitis to systematic poisoning, that can lead to death.

The number of workers in the United States affected by pesticides is unknown, although estimated at 300,000 per year. A Nebraska study of emergency room visits and hospitalizations for pesticide-related illness, conducted during the 1984 – 1985 crop season, found an annual incidence of 1.35 cases per 10,000 population. Organosphosphates were responsible for 25% of the incidents while anhydrous ammonia, for 33%.

Many poisonings occur from skin absorption. Most are from organophosphates pesticides, especially parathion.

Effects of Pesticide on the Skin

More than 40% of all reported occupational diseases in the US are disorders of the skin. The actual incidence is estimated to be 10-50 times higher than the reported incidence of 1.5 cases/1,000.

Workers in agriculture are at four times greater risks of skin diseases than workers in other industries. Most pesticide-related skin problems are primary irritant or contact dermatitis. However, pesticides can also cause allergic contact dermatitis, which can become chronic problem in some cases that workers can be permanently disabled since they cannot tolerate even minute exposures to the pesticide. Often, the condition is aggravated by sunlight, adding to the disability.

Chronic Effects of Pesticides

Most workers are exposed to many different pesticides (and "inert" ingredients) over a working lifetime. The great

majority of workers do not know the names of the pesticides to which they are exposed as well as the acute and chronic risks to their health.

Pesticide and Cancer in Humans

Several of the early studies of cancer were done at pesticide manufacturing plants and these studies reported no evidence of increased risk of cancer. Such early reports were used to conclude that pesticides could be used safely and posed no carcinogenic risk to occupationally-exposed workers, or to the general population exposed to much lower levels.

Drawing such conclusions from these studies is problematic. The number of deaths was very small, a low incidence of cancer (such as lymphoma, liver, brain) may not have been found because the sample was too small or the clinical latency period was too short. Since the cancer is a disease of long latency, too few years might have passed for the effect to be demonstrated. Both of these factors could bias the studies toward finding no significant effects. In addition, many of these studies had serious design flaws and primarily used company records.

Several occupational groups whose pesticide exposure may put them at increased risk of cancer have been studied. Among them are farm owners and managers, farmworkers, pesticide sprayers, structural pest control operators (exterminators), pesticide manufacturing workers and grain mill workers.

Conclusion

The realities of agricultural practice, the lack of legal protection and severe weaknesses in the existing laws, combined with the toxic pesticides that are ubiquitous in the farmworkers' environment, make agricultural work especially hazardous. Farmworkers are exposed to toxic pesticides from many sources – the crops they cultivate and harvest, the soil in which the crops are grown, drift in the air and water from pesticides applied to adjacent fields or to the very fields in which they are working.

Little is known about the extent or magnitude of chronic health problems related to occupational exposure to pesticides because appropriate studies have not been done.

Farmworkers live in homes surrounded by fields that are heavily and repeatedly sprayed. Pesticides are likely to be in the irrigation water, which many farmworkers must use for bathing and drinking due to the substandard living quarters. Pesticides may contaminate the groundwater from which they get their drinking water. Farmworkers are most likely to consume produce very soon after harvesting and thus, may get more pesticide residues in their food than the general public.

Toxic occupational exposures start at a very young age, since agriculture is the only industry in which children comprise a significant part of the work force. Infants and very young children are often taken to the fields with their parents.

Amendments to federal and state pesticide laws and regulations that would protect farmworkers and improve their working conditions are resisted in the agricultural and agrochemical industries. In this regard, it is of interest that the first ban on DDT in the US was not by the EPA in 1972, but in a 1967 United Farm Workers' Union contract with a California grape grower.

The public health task is clear. Not only must more resources and priority be given to biological monitoring and epidemiological studies of farmworkers, but support must also be given to the efforts of farmworkers and their unions to make their work place safe for them and their children.

Source:
Marion Moses, specialist in Environmental and Occupational Medicine, Asst. Clinical Professor of University of California and member of the National Advisory Committee of the Environmental Protection Agency's Pesticide Farm Safety Center. Printed in The Pesticide Handbook· Profiles for Action, 3rd Revised Edition. International Organization of Consumers' Unions (IOCU) and Pesticide Action Network (PAN). 1991; Illustrations provided by IIRR.

Women Farmworkers and Pesticides:
Stories from the Field

Women farmworkers are an essential part of the agricultural labor force around the world. In the United States, they make up 19% of the workforce, and in some jobs such as packing sheds, over 50% of the workers are women. Although most farmworkers are regularly exposed to toxic pesticides, few studies have assessed the impacts of pesticides on men farmworkers – even fewer have looked at women farmworkers. The Farmworker Women's Leadership Network - Lideres Campesinas and Pesticide Action Network North America is compiling information and stories to document the pesticide-related health problems faced by women farmworker. This research is crucial because when women are exposed to pesticide, so are their children and grandchildren. The effects of pesticides can include birth defects, developmental problems and cancer as well as other health problems.

Carmen, a farmworker in the Salinas Valley in California, recalled that when she was poisoned by a pesticide, she did not know what the pesticide was. "Nobody told me what these were, nobody told me they were harmful..."

She had migrated from Mexico to the United States and was working in the lettuce fields. Early on Saturday morning of August 1997, Carmen and a crew of workers were cutting lettuce. Several workers noticed that a plane was spraying pesticides two fields away. The foreman told everyone to leave the field immediately, but about 15 or 20 minutes later, they were told that it was safe to return to work.

Source:
Lucy Rosas and Margaret Reeves. Global Pesticide Campaigner, December 1998.

Ten Commitments to Protect Farmworkers from Toxic Pesticide

The Ten Commitments were formulated by the farmworker organizations and advocates listed below. The adoption of all of the Ten Commitments is necessary to fully empower farmworkers to take action to protect themselves and to overcome decades of inadequate, unjust and unenforced laws.

1. Prohibit use of any pesticide known or suspected to cause cancer, birth defects, neurological damage, or that in the highest acute toxicity category. During any phase-out period, require a minimum 14-day quarantine period before workers can re-enter a work area in which any such pesticide has been applied.

2. Prohibit all aerial application of pesticides.

3. Guarantee farmworkers the right to know what specific pesticides are used in their workplace through crop sheets, posting of warming signs and training that should tackle health effects, protective clothing and other safety information in the language the workers understand.

4. Require and enforce a mandatory national pesticide use reporting system for all users with all the active and inert ingredients in all products.

5. Require and enforce a mandatory national reporting system for all potential pesticide-related incidents and all illnesses of agricultural employers and health professionals.

6. Guarantee all farmworkers the right to bring an action to enforce their rights under law, including employer retaliation, violation of the U.S. Worker Protection Standard and regulation of toxic pesticides.

7. Guarantee all farmworkers the rights to organize, have union representation, earn a living wage and overtime pay, have strong child labor provisions, work in a safe workplace and obtain worker's compensation benefits.

8. Require and fund a continuing program, with the cooperation and approval of farmwokers, for both biological and environmental monitoring of pesticides among farmworker families and their communities.

9. Require and fund research, with the cooperation and approval of farmworkers, to set up a program to monitor long-term effects of pesticide including cancer, reproductive harm and neurological damage.

10. Change federal and state agricultural funding to promote and research the transition from toxic pesticides to biorational and sustainable pest control methods.

California Rural Legal Assistance Foundation, Inc.; Farmworkers Justice Fund. Inc.; Farm Labor Organizing Committee; Migrant Farmworkers Justice Project; National Council of La Raza; Piñeros y Campesinos Unidos del Noretes; and Pesticide Education Center

Farm Children: At Risk from Pesticides

Before World War II, growing-up on the farm in the United States implied a healthy lifestyle – lots of clean air, fresh food and physical activity. Today, with the pervasive use of highly-toxic agricultural pesticides, growing up on, or even near, agricultural land means potentially being surrounded by a swirl of poisons – in the air, in water, on food and on nearly everything a child touches, from a teddy bear to a parent's embrace. Nearly 400,000 young children in the U.S. live on farms, and an additional five million agricultural workers – many of whom have children – live near farms or agricultural areas.

Children and infants are uniquely at risk from pesticides because of physiological susceptibility and greater relative exposure. Three major factors are particularly important:

- Children often have greater contact with the environmental through dirt and floor surfaces, and because of hand-to-mouth behavior.
- Children drink more fluids, breathe more air and eat more food per unit of body weight than adults; they also eat a more limited selection of foods.
- Children's bodies and brains are immature and still developing; they are more susceptible to certain cancers and reproductive problems; and they have a longer expected lifetime in which to develop illness after an exposure.

Thus, environmental toxicants can have more serious effects on children.

Food residues – only one of many exposures

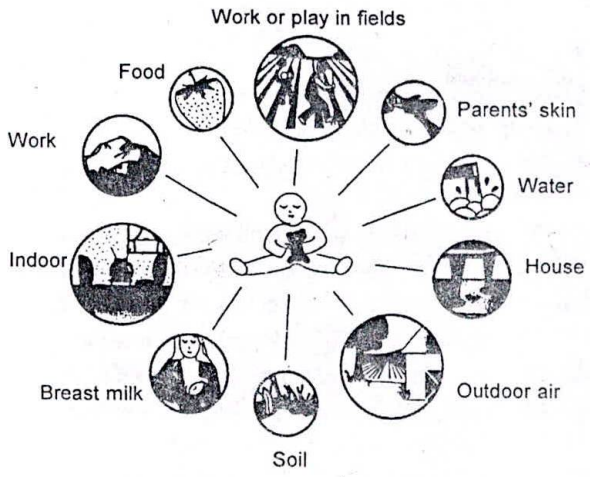
The National Academy of Sciences, in their pioneering 1993 report *Pesticide in the Diets of Infants and Children,* clearly showed that children bear disproportionately high risk from U.S. use of pesticides on food. Their report focused on children's dietary exposure to pesticide but looked only at children living in non-agricultural areas. Farm children are exposed to pesticides in food levels similar to or higher than the general population. Higher levels of food-borne exposure in some agricultural areas may be due to the shorter transport time from the field to the table, allowing less time for degradation of residues on the food.

For many children from agricultural families, however, food represents only a small portion of their total daily exposure to hazardous pesticides. Farm children also face potential exposure from "take home" residues on their parent's clothing from contaminated water, from playing in contaminated soil on or near fields, from pesticide drift and from indoor air and dust in the home. In addition, many children accompany their families to the fields, where they may face exposures at occupational levels whether or not they are working.

"Take-home" exposure to toxic workplace hazards have been reported for nearly a century in various settings. A 1995 study by the National Institute for Occupational Safety and Health revealed that home contamination is a worldwide problem, and an identified incident from 28 countries and 36 states. The report documents over 100 known deaths of family members from asbestos-related mesothelioma, numerous cases of poisoning by pesticides and metals such as lead, mercury and cadmium, and ill effects caused by estrogenic and infectious agents from the workplace. Family members' exposure to pesticide can occur from contact with contaminated skin, clothing or shoes, contamination of the family car and visits to the workplace. In addition, family members can be exposed to chemicals in the exhaled breath of a worker (primary solvents which can be present in pesticide formulations) or in contaminated breast milk of a working mother.

In the San Joaquin Valley, researchers from the California Department of Health Services conducted a pilot study of 10 homes and one day-care center. Approximately 50 pesticides had been used within one mile of the town during the months preceding the testing. Samples of house dust were collected, along with hand wipe samples from the toddlers in each family. An accompanying questionnaire was used to obtain information about pesticide use in the home, parental occupation and the child's activities.

Everything They Touch
Farm children face pesticide exposure from all sides.



Recommendations of the Natural Resources Defense Council include:

- U.S. Environmental Protection Agency's (EPA) pesticide tolerance decisions under the U.S. Food Quality Protection Act (FQPA) should consider all exposures faced by farm children and food tolerances should be set low enough to protect these children from cumulative health risks.
- EPA must use an additional safety factor of at least tenfold as required by FQPA to ensure adequate protection of farm children if there is uncertainty about their exposure or about the toxicity of the pesticide to fetuses, infants and children.
- The U. S. Farm Worker Protection Standards should be re-evaluated to better protect children who accompany their parents to work in the fields.
- EPA should phase out Category 1 acutely toxic pesticides and use of the most hazardous neurotoxic organophosphate and carbamate pesticides, endocrine disrupters and carcinogens while developing and promoting alternative pest management practices.
- Day care should be provided for working families with young children. Farm workers must receive a living wage and benefits, so that their children are not forced to work in order to survive.
- Workers must be informed about the identity of chemicals they may be exposed to and the known or potential health effects of these chemicals.

Although home pesticide storage and use appeared to be generally lower among farmworkers, pesticide loading in house dust was generally greater. Overall, 12 different pesticides were detected in house dust samples. Two pesticides, diazinon and chlorpyrifos, were found on the hands of the three out of five farmworker children sampled. None of the children in non-farmworker homes had detectable pesticide residues on their hands.

A screening assessment revealed that the diazinon exposures to two of the farmworker children could exceed the U.S. Environmental Protection Agency's chronic reference dose from hand-to-mouth exposure alone. The reference dose is set at a level that is predicted to cause no long-term health effects, so anything higher constitutes a risk.

Pesticide-contaminated equipment is also responsible for numerous preventable illnesses and deaths according to reports in the medical literature.

Children in the Fields

An estimated 300,000 children between the ages of 15 and 17 work in U.S. agriculture at some point during the year, representing more than 7% of all hired farmworkers working on crops. The National Agricultural Worker's Survey of 1989 estimated there were 587,000 children of migrant workers, age 21 or younger, involved in seasonal agricultural services in the United States. Of these children, 65% were reported to travel with their parents but not work on the farms; 6% traveled and participated in the farm work; another 29% traveled and participated in farm activities; another 29% traveled on their own to do farm work.

A 1990 survey of 50 farmworker children in New York State revealed that despite legal prohibitions against working with hazardous substances, 10% of children under age 18 reported mixing or applying pesticides. One-third of the children had been injured at work within the past year, more than 40% had worked in fields still wet with pesticides and 40% had been sprayed by crop-duster or exposed to pesticide drift. In this survey, 15% of the children reported having experienced health symptoms consistent with organophosphate pesticide poisoning, but few had sought medical care for the symptoms.

Children, in addition to entering fields for work, often accompany their parents to the fields due to a lack of childcare. The frequency with which children are bought to the fields while their parents work is hard to measure. But several small surveys and numerous anecdotal reports indicate that young children are often in the fields.

Source:
Gina Solomon. Trouble on the Farm: Growing up with Pesticides in Agricultural Communities, Global Pesticide Campaigner. December 1998.

Agenda for CHESS III

(13th August 2004) Day 1: Keynote and Introductions

Timings	Agenda Item	Presenter
2:00 to 2:30 pm	Keynote Address: "Bhopal's fight against Corporate Crime"	Rashida Bee – Bhopal Gas Peedit Mahila Stationery Karmchari Sangh
2:30 to 3:00 pm	Introduction to CHESS – Agenda	Dr. Narsimha Reddy, Hyderabad
3:00 to 4:00 pm	Self introduction of the participants	
4:00 to 7:00 pm	Group introductions/ presentations	Moderator: S. Usha, Trivandrum
7:00 to 8:30 pm 8:30 pm	DINNER Film screening – "Miles To Go"	 Bidhan Singh

(14th August 2004) Day 2:

Timings	Agenda Item	Presenter
9:00 to 9:30 am	Introduction to Environmental Health a) How is pollution linked to health? b) What is the relevance of health data in fighting against pollution? c) Community health indicators d) What challenges/ opportunities in accessing such data?	Dr. Sukanya and Dr. Sreedhara
9:30 to 10:00 am	Understanding Community Health a) Introduction to Epidemiology and Lay Epidemiology b) Introduction to tools of analyses, including simple survey/ studies c) Strengths/ Limitations of health studies	Dr. Sunil Kaul
10:00 to 10:30 am	Responses	Moderation:
10:30 to 11:00 am	Community Environmental Health Issues: Experiences from Bhopal: What can people do?	Satinath Sarangi, Sambhavna Trust Clinic Bhopal
11:00 to 11:30am	Tea Break	
11:30 to 12:00	Mining and Health a) How mining impacts environment and community/ worker health b) How to understand health effects c) Opportunities for health assessment	Dr. Rajan Patil
12:00 to 12:15 pm	Responses	Moderation:
12:15 to 1:15 pm	LUNCH	

1:15 to 2:15pm	Hospet Mining film	Samvada
2:30 to 4:00 pm	Environmental Monitoring Air Pollution & Monitoring	Community Environmental Monitoring
4:00 to 5:30 pm	Water Pollution & Monitoring	People's Science Institute, Dehradun
5:30 to 7:00 pm	Group introductions/ presentations	Moderator:
9 p.m.	Open slot for film presentation	

(15th August 2004) Day 3:

Timings	Agenda Item	Presenter
9:00 to 11:00 am	Group introductions/ presentations	Moderator: Ravi Rebbapragada
11:00 to 11:30 am	Tea break	
11:30 to 12:30	Case Presentations – Roro, Silicosis studies, Greenpeace presentation, Mining studies by Rajan Patil, CEM Odour study, SCMC	Moderator: R. Sridhar, Trivandrum
12:30 to 1:30 pm	Lunch	
1:30 to 2:00	Hesperian Book on Mining	Presenter:
2:00 to 3:00 pm	Case presentations continued	Moderator: R. Sridhar
3:00 to 4:30 pm	Panel Discussion on Campaign Directions	T. Mohan Vijay Kanhare Satinath Sarangi (Moderator: Navroz Mody)
4:30 to 5:30 pm	Feedback and closing	Moderator: Ravi Rebbapragada

MACABRE DANCE OF DEATH

Why silicosis still kills the mineworkers of Delhi

The history of mine and stone-crusher workers of Delhi dying by silicosis goes back to the time when the British rulers made Delhi the capital of their empire in India. The rulers had then hired workers to level down the Raisina hills, so that the viceroy's residence could be built there.

In the 1940s and 50s, workers were hired to crush stones in the Anand Parbat–Kala Pahad Ratiwala areas, followed by Timarpur and Chandrawal. Over the next two decades the work moved on first to Dhaula Kuan, and when the land prices there went up, to Lal Kuan, Rajokri, Bhati mines and Kusum hills.

The last decade of the 20th century was one of turmoil both for India and the world. The stone workers could not be left untouched. They were now confronted with a new phenomenon. Earlier the government-land mafia nexus used to close down crushers and mines, but now the honourable Supreme Court itself got into action. The Court decreed the closure of mines and stone-crushers in 1991-92, acting on a public interest litigation (PIL) filed by lawyer M.C. Mehta.

For the mineworkers of Delhi this decree heralded a macabre dance of death.

As the dusk set in one day in April 2003, Mohini Devi breathed her last. She had been witness to 12 untimely deaths in her family. Perhaps her husband Mangal Singh is next on line. The family has been condemned to these horrible deaths because it lives on Lal Kuan.

Nearly every family of the area shares their fate. Chanda has been admitted in the hospital with another six of her family. Gopal's mother is in the hospital with eight from family. Dhanna has just returned from the hospital. Mohan Lal is not in hospital. He is battling his sickness at home with six other members of his family. Mansa, Ghasi and Jagdish are also at home, fighting a desperate battle in the last throes of a deadly affliction their work gives them.,

These workers had been hired for the stone mining and crushing operations in Lal Kuan that continued till 1992. They, and their families living there, have breathed in massive amounts of silica dust while stones were broken in the mines and the crushers. This dust has been deposited on the lungs of the workers and their families for as long as they worked and lived on the mines. This causes silicosis – a deadly condition – in most workers, besides tuberculosis and similar diseases.

Disease and death is the price they pay because they work on stone mines to survive. They work on these mines because they have to live. In a grossly unjust, unequal world.

Delhi is our beautiful capital city. Many people had to sacrifice their lives for this urban beauty. Let us acknowledge the exemplary sacrifice made by the Lal Kuan workers. After all, their lungs bore (and still bear, as we shall see) the assaults of the deadly silica dust so that the city could have its modern monuments. The life of these people makes up the stark, sickly underbelly of the beautiful city.

These workers continue to bear the real cost incurred in making the city beautiful. A cost they share with other toilers of the city. A cost that those who enjoy the comforts and beauty of the city have always refused to bear.

The Supreme Court's decree in 1991-92 had led to closures in Lal Kuan, Rajokri, Bhati mines, Anand Parbat and other areas in Delhi. In the name of health and the environment. Accordingly, the crushers were shifted to Pali in Haryana. And the mineworkers continued to breathe the silica dust!!

Whose health was the Court concerned with? For whom did it want to protect the environment? Certainly not those who worked in the mines and crushers. Because they continue in their new 'workplace' in Pali to breathe the same silica dust that endangered their life in Lal Kuan. However, the residents of posh colonies near Lal Kuan, like Eros Garden, Kant Enclave and Suraj Apartments, have to thank the Court for ridding them of the silica dust that the breeze would sometimes blow into their homes. In fact, the rich could begin to move into these colonies only after 1992. Of course, the real estate barons have to thank the Supreme Court for 'protecting their investments' and 'dismantling a market barrier'.

So the curtains are not down yet on the dance of death for the Lal Kuan workers. Silicosis has massacred three thousand (3,000!!) of them already. Both the central and the Delhi governments have been mute witnesses to these killings. And so, in June 2003, we knocked on another door – the National Human Rights Commission (NHRC). The NHRC has already sent notice twice to the central and the Delhi governments, but the governments are yet to respond.

In these circumstances, we appeal to you to give your solidarity and support to our struggle.

In solidarity

Azad (for PRASAR)

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दिल्ली के खान मजदूरों में मौत का ताण्डव आज भी जारी!

दिल्ली के खदान और क्रेशर मजदूरों की सिलोकोसिस से मरने की कहानी पुरानी है। जब अंग्रेजों ने दिल्ली को राजधानी बनाया तो उन्होंने रायशीना की पहाड़ी को ही अपना साम्राज्य का केन्द्र बनाया था तब उन्होंने भी रायशीना की पहाड़ी के आस-पास के ही मजदूरों से पत्थर को तुड़वाया था।

इसके बाद 1940-50 के दशक में खदान मजदूरों ने आनंद पर्वत-काला पहाड़, रतिवाला आदि में काम किया और फिर खदान क्रेशर मजदूर तिमारपुर, चन्द्रावल में पत्थर तोड़ने लगे। 1960-70 के दशक में मजदूर धौला कुंआ में पत्थर तोड़ने चले गये जब इस जमीन की भी कीमत बढ़ गयी तो मजदूरों को लालकुंआ, राजोकरी, भाटीमाइंस, कुसुम पहाड़ी जाना पड़ा।

इसी के साथ 1980-90 का दशक आ गया- 1990 का दशक भारतीय समाज और दुनिया में उथल-पुथल का दशक रहा है। पत्थर मजदूरों के मामले में भी यह दशक उथल-पुथल का रहा। 1990 से पहले सरकार या भूमाफिया मिलकर क्रेशरों और खदानों को बन्द करते थे लेकिन पहली बार माननीय उच्चतम न्यायालय ने खदानों क्रेशरों को 1991-92 में बन्द किया पर्यावरण के नाम पर?

इसके बाद दिल्ली के खदान मजदूरों में शुरू होता है मौत का ताण्डव। एक अप्रैल 2003 की सायं 7.00 पर मोहिनी देवी ने अपने जीवन की अन्तिम सांस ली। इनसे पहले भी इनके घर में से 12 लोग समय से पहले ही यह रास्ता देख चुके हैं और अब शायद इनके पति मंगल सिंह का नम्बर है। क्योंकि ये सब लालकुंआ के रहने वाले हैं। लालकुंआ इलाके में लगभग सभी घरों का यही हाल है। चंदा अस्पताल से आया है। मोहन लाल घर पर ही बीमारी से जूझ रहा है और उनके घर में से 6 लोग, व गोपाल की मां भी अस्पताल में है और उनके घर में से 8 लोग, धन्ना भी अभी अस्पताल से आया है। मोहन लाल घर पर ही बीमारी से जूझ रहा है और उनके घर में से 5 लोग, मनसा, घासी, और जगदीश भी बीमारी से अपनी जिन्दगी की आखिरी लड़ाई घर पर ही लड़ रहे हैं और उनके घर का भी यही हाल है। हाल तो पूरे लालकुंआ क्षेत्र के निवासियों का यही है क्योंकि यहां पर 1992 से पहले पत्थरों की खाने और पत्थरों के क्रेशर हुआ करते थे। ये लोग इन खानों और क्रेशरों में काम करते थे। जब 1992 से पहले पत्थरों की खानें और पत्थरों के क्रेशर हुआ करते थे ये लोग इन खानों और क्रेशरों में काम करते थे। जब क्रेशरों और खानों में पत्थर टूटता है तो वहां काफी धूल उड़ती है और इस धूल को उस जगह काम करने वाले और रहने वाले लोगों की सांस के साथ सिलिका नाम की धूल के कण अन्दर फेफड़ों में ले जाते हैं यह कण अन्दर जाकर जम जाते हैं और इन लोगों को सिलोकोसिस नाम की बीमारी पैदा करता है। इसी के साथ उनको टी.बी. और टी.बी. जैसी अन्य भयानक बीमारियां भी हो जाती हैं।

दिल्ली हमारे देश की राजधानी है, और काफी सुन्दर भी है इसको सुन्दर बनाने में काफी लोगों ने अपनी जान की कुर्बानी दीं हैं। उन कुर्बानी देने वालों में से लालकुंआ निवासी भी हैं क्योंकि ये लोग उसी पत्थर की खानों और क्रेशरों में काम करते थे जिनसे निकलने वाले पत्थर और बदरपुर से दिल्ली को सुन्दर बनाया गया। मगर ये लोग सुन्दर बनाने का परिणाम आज भी भुगत रहे हैं।

1991-92 में माननीय उच्चतम न्यायालय ने एम.सी.मेहता की जनहित याचिका पर अपने आदेश से दिल्ली में लालकुंआ, राजोकरी, आनन्द पर्वत, भाटी माइंस आदि अन्य स्थानों से पत्थर तोड़ना बन्द करा दिया था और इन क्रेशरों को पाली (हरियाणा) में भेज दिया। स्वास्थ्य और पर्यावरण के नाम पर?

आज भी लालकुंआ के लोग पाली में काम करने जाते हैं और उसी धूल को खा रहे हैं जिस धूल को लालकुंआ में खाते थे। लेकिन लालकुंआ के पास ही बसे इरोज़ गार्डेन, कान्ता इन्क्लेव, सूरज अपार्टमेंट जैसी पॉश कालोनियों में आजकल यह धूल नहीं जा रही है और ये अमीरों की कालोनी 1992 के बाद ही आबाद हो भी पाई है, लेकिन लालकुंआ में मौतों का ताण्डव आज भी जारी है यहां अभी तक लगभग 3000 लोग इस बीमारी से मर चुके हैं और यहां विधवाओं की संख्या निरंतर बढ़ती जा रही है। ऐसा लगता है कि पूरा लालकुंआ विधवाओं से भरा पड़ा है। दिल्ली सरकार या केन्द्र सरकार ने इन लोगों के लिए आज तक कुछ नहीं किया है और इसके बाद हम लोग जून में मानव अधिकार आयोग में भी गए। उन्होंने दो बार केन्द्र सरकार और दिल्ली सरकार को नोटिस भेजे लेकिन केन्द्र सरकार और दिल्ली सरकार ने मानव अधिकार आयोग को अभी तक कोई जवाब नहीं दिया है। इसलिए हम आप सभी से अपील करते हैं कि आप लोग इस संघर्ष को सफल बनाने में हमें सहयोग दें।

धन्यवाद!

सम्पर्क:
''आजाद''

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BREATH OF DEATH

Silicosis continues to be a major killer in certain areas of Delhi and its neighbourhood where workers of stone-crushing and quarrying units are exploited by their employers and neglected by governments.

T.K. RAJALAKSHMI
in New Delhi

ON the surface, the national capital is aglow with well-being and prosperity. But underneath the ostentation, lie buried stories of people who may have built the city but are now condemned to a life of disease, death and despair.

It is always quiet in Lal Kuan, a village tucked away in a dusty corner of the city. It was never so. Formerly an active mining and quarrying area, all that is left of it today are the former mine workers and stone crushers for whom even the very act of breathing is an effort. Many of them are suffering, in varying degrees, from silicosis.

"I am not even fit to beg," says Budh Ram, a resident of Lal Kuan, in the Badarpur area of South Delhi. Budh Ram's constitution was not like this a few years ago. His present condition is a result of the work he did in the stone-crushing units and quarries that once dotted Lal Kuan. Today, he says he does not feel hungry and finds it difficult even to lift a jug of water to wash himself in the morning. "I cannot walk for long. I feel breathless all the time," he says. Budh Ram has been taking medicines for tuberculosis (TB) for the past eight to nine years and finds no improvement in his condition.

Budh Ram has no choice but to while away his days, unable to do anything productive even at home. He has three children and his wife, who is the sole breadwinner in the family, works as a domestic help. S.A. Azad, a social activist and the director of the non-governmental organisation, the People's Rights and Social Research Centre or PRASAR, says that Budh Ram and several others in Lal Kuan have a condition caused by silicosis. "No one acknowledges this as it would imply paying compensation," says Azad who first noticed the extremely emaciated people in the Lal Kuan area.

Lal Kuan literally means "red well". The village bears hardly any signs of prosperity. It is like any other place inhabited by the working class in the capital, the only difference being that most of its people have lost the will to live.

Lal Kuan has been at the centre of mining and quarrying activity since Independence. Active mining came to a halt in 1985, but the stone-crushing units continued to operate until 1992, when the Supreme Court in *M.C. Mehta vs Union of India* ordered that the units be closed and the stone-crushers, quarry workers and miners be shifted to Pali in Haryana. While the move contributed to a decline in Delhi's pollution levels, some of the workers were rendered jobless while others were shifted to Pali and other places where mining continued.

Dhanna Ram worked in what he calls the Lal Kuan *pahaad* (hill). Lal

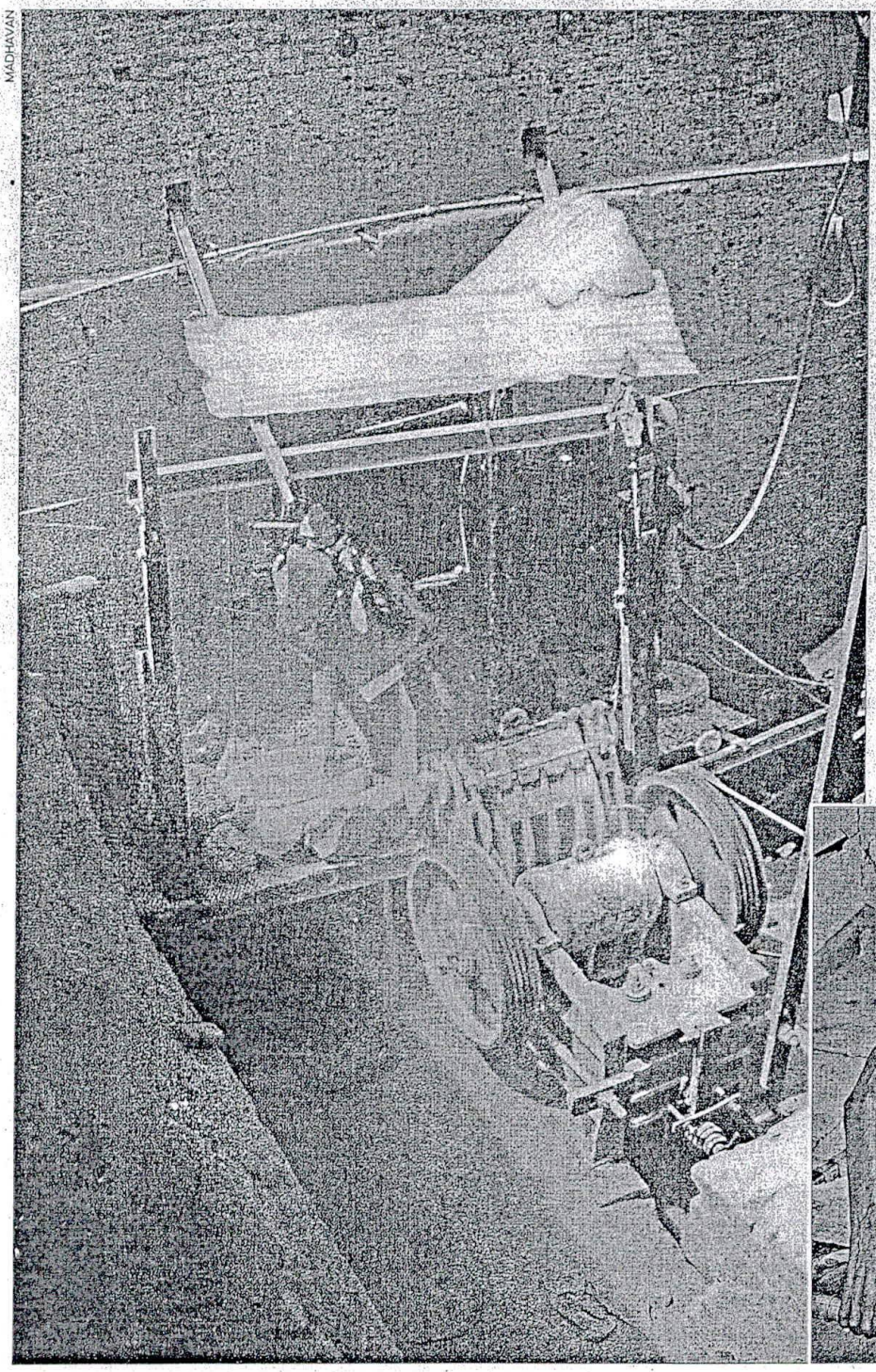
PICTURES: T.K. RAJALAKSHMI

Victims of mining activity in Lal Kuan village. From left, Budh Ram, who says he is unable to lift even a jug of water to wash himself; Gulab Devi, who has been engaged in mining and stone-crushing activity for 30 years; and Narayani, whose husband succumbed to silicosis.

Kuan is located on the Mehrauli-Badarpur road. Dhanna Ram, like several others, has been battling tuberculosis for several years but medicines have failed to improve his condition. He cannot even get up from his cot. Dhanna Ram looks older than his years; his wife Kamla's condition is marginally better but she looks sickly and frail. Dhanna Ram recalls: "While working, we always had a thick layer of dust on our bodies. When we spat, all that came out was dust and phlegm."

Residents of Lal Kuan say that in the years when mining and crushing activities were on, everything in the village used to be covered by a thick layer of dust and visibility used to be poor. "It was quite normal. We, our children, all got used to it," said a fruit seller, who also used to do stone-crushing work. Now he cannot do any hard work and runs a banana stall, which is highly inadequate to support his family. Gulab Devi, another Lal Kuan resident, says she spent her youth in stone-related work. "For 30 years, I and several others worked in mining and stone crushing. We have done it all – we crushed stones and rubble, we lifted stones and we worked at the crusher," she says. Many of them belonged originally to Rajasthan and migrated several years ago, in search of employment. Lal Kuan is full of such people. There are survivors like Narayani, Kamla, Mangal Singh, Nathu Ram and Gulab Devi and there are those who worked and are now gone like the six sons of Gulab Devi, Bhola Ram and Mohini Devi who were sent out of government hospitals.

The misery in Lal Kuan came to light after an inquiry by PRASAR in 2001 revealed that several persons from the village who were involved in mining, quarrying and crushing activities had died prematurely and that there was no accountability of any sort on the part of the government or the employing agency. According to PRASAR, an unprecedented occurrence of death and ill-



MADHAVAN

T.K. RAJALAKSHMI

(Left) A stone-crusher in Pali, Haryana, some 10 km from Lal Kuan. Prolonged exposure of workers to free crystalline silica dust results in chronic fibrosis of the lungs. (Below) Dhanna Ram, who has been battling silicosis for several years. Medicines have failed to improve his condition.

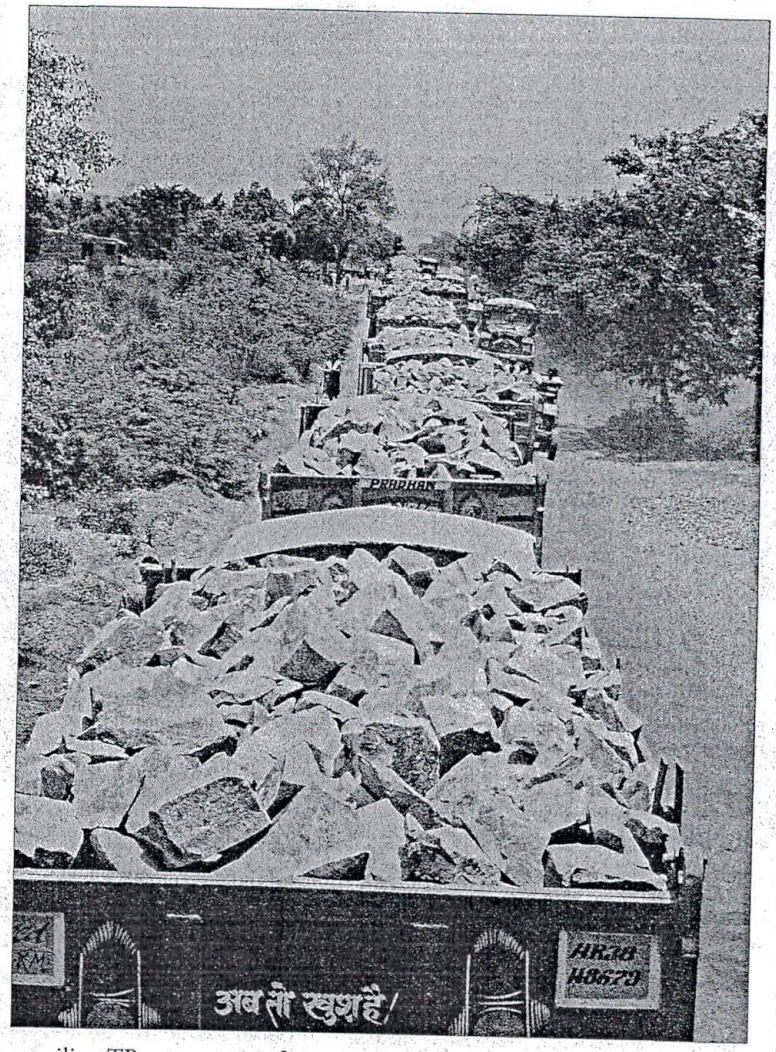
PICTURES: MADHAVAN

Stone-mining operations in progress at Sirohi, Haryana. All mining activity has shifted from Delhi to Haryana following a Supreme Court order. (Right) Trucks carrying the stones mined.

health among the residents followed. A survey conducted on the basis of an inquiry into the occupational patterns of the victims and on the symptoms of silicosis revealed that the majority of Lal Kuan residents suffered from respiratory problems and silicosis, a direct outcome of the nature of their work. Of the 146 persons interviewed, 83 were suspected to be suffering from silicosis and other incidental diseases and 55 persons claimed that their relatives had died of the disease. Several of those surveyed were being treated for tuberculosis without any improvement in their situation. The survey also revealed that the percentage of persons above 55 years in Lal Kuan was abysmally low.

PRASAR submitted its preliminary survey to the Centre for Occupational and Environmental Health for further verification. The centre conducted a survey, did check-ups and interviewed people. Commending the summary report prepared by PRASAR, the experts from the centre recommended that the degree of certainty of the presence of silicosis in the residents of Lal Kuan be ascertained. The preliminary findings showed that people suffered from cough with sputum and shortness of breath and appeared weak and wasted. It was also revealed that women who had lost their husbands to silicosis were themselves suffering from the disease. The centre's study, which was done in December 2002, said: "If silicosis or silico-tuberculosis is present, then the residents and ex-workers are eligible for compensation; if not, they are not." The experts, T.K. Joshi, Project Director from the Centre for Occupational and Environmental Health, and Elihu Richter, a Professor from the Department of Occupational and Environmental Medicine, Hebrew University, Jerusalem, stated categorically that if silica was found, it was a case for action. "Right now, absence of evidence should not be equated with evidence of absence."

They observed that some 70,000 residents and workers are or were reportedly at risk, many had died of tuberculosis-like respiratory diseases at a young age, many were still employed at the new quarry, and there was a sizable minority which had never worked in a quarry. Few, they noted, had been examined under X-ray, none had been autopsied, there was no air sampling done and there were no preventive safeguards of any kind. The issue, according to them, was about establishing a preventive programme of dust suppression at the current quarry and carrying out some simple epidemiology studies to make a presumptive diagnosis of the nature of the ailment the residents are suffering from. They recommended that "diagnostic tests be conducted to confirm or reject the hypothesis that



cosis or silico TB was a major form the major cause of respiratory disease l premature mortality in this pop- tion". According to them, a quick nparative study between those who rked in the quarry and those who ver did such work should be done to ermine the prevalence and age of on- of respiratory disease.

Silicosis is the oldest known occu- ional disease to affect sand-blasters, k cutters and miners. It is because longed exposure to free crystalline ca dust (silicon dioxide) results in onic fibrosis of the lungs. When stalline silica (dust) is inhaled, lung tissue reacts by develop- fibrotic nodules. This condi- is called silicosis. If the lules become too large, breath- becomes difficult and may re- in death. Usually diagnosed X-ray, silicosis is an irrevers- , disabling disease. It can be vented by employing certain hanisms to avoid the inhala- of the dust and by the use of technology that avoids the formation of silica-bearing dust. The inhalation of crystalline silica particles can lead to TB and bronchitis.

In March 2003, Mohini Devi, wife of Mangal Singh, died because of the lack of treatment and the unsympathetic attitude of government hospital staff. She, who had worked as a stone-crusher for more than 20 years, went to seek treatment at the Badarpur dispensary, after vomiting blood. She was denied treatment. She approached the Nehru Nagar chest hospital, another government-run institute, where the doctor in charge allegedly refused to attend to her. Finally, on April 1, 2003, she was admitted to the Safdarjang Hospital where she breathed her last. Mangal Singh wrote to the Health Minister of Delhi regarding the callousness of the government doctors and, predictably, got no response.

Residents of Lal Kuan say that in the years when mining and crushing activities were on, everything in the village used to be covered by a thick layer of dust and visibility used to be poor.

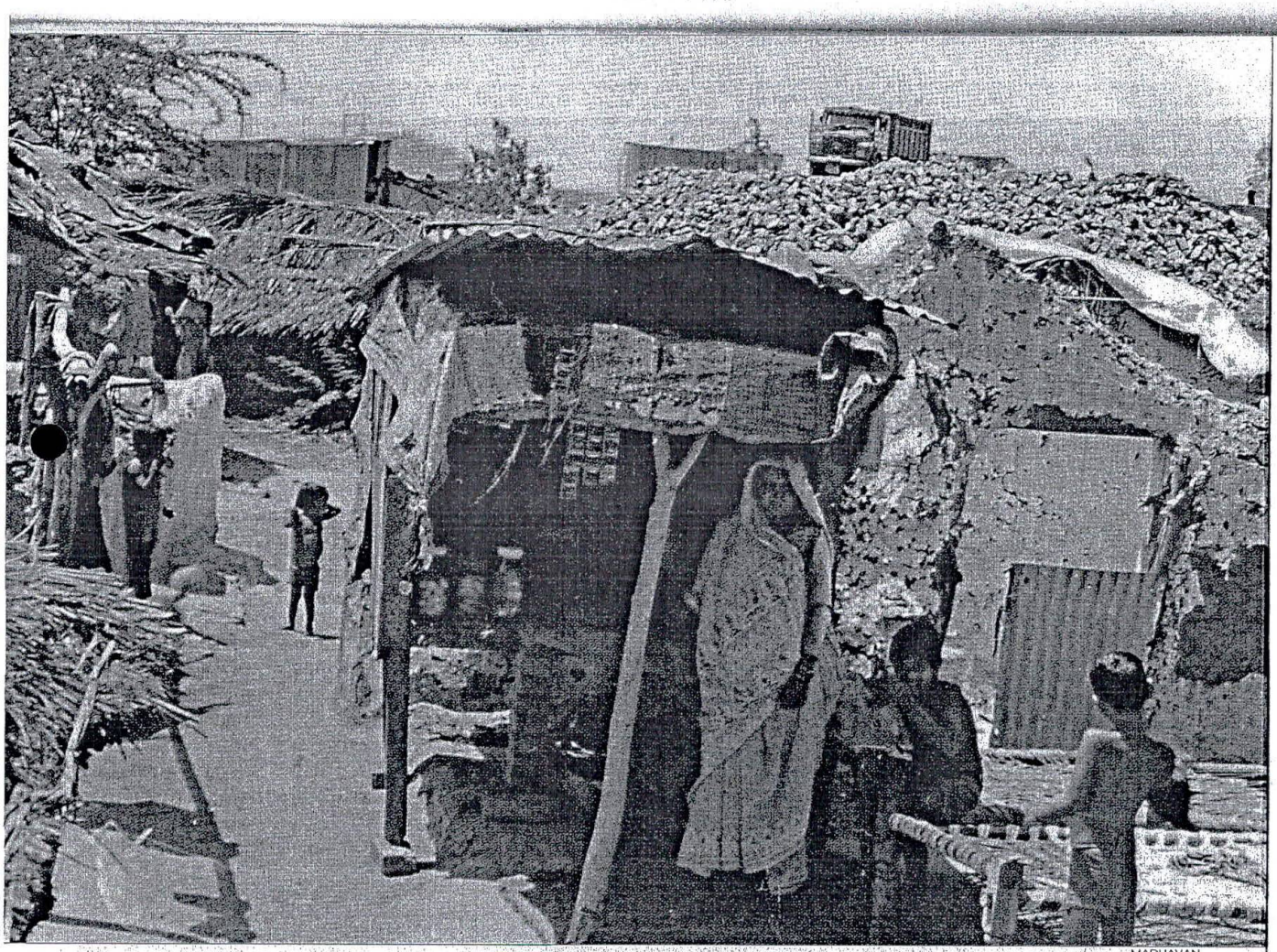
Meanwhile, between October 2003 and January 2004, at least five more workers, including Budh Ram and Mangal Ram, were diagnosed with silicosis by the government managed Lala Ram Sarup Institute of Tuberculosis and Respiratory Diseases. The institute's chest physician, Anand Jaiswal, said that respiratory diseases caused by silica dust were common among people living and working in the area.

Jaiswal, who has been associated with the institute for a long time, said that the symptoms of the patients he treated included an "incapacitating breathlessness". He said: "I have been here for 13 years and they have been coming regularly. We have three units here and all three have been reporting silicosis cases. It is not rare anymore. Even our junior doctors have become experts in diagnosing such cases."

Jaiswal said that even though the work had shifted out of Delhi, patients were coming from Haryana. He said that the disease was found among those who had been involved in stone crushing and quarrying operations for five to 10 years. "There is no cure. Once the dust settles in the lung, it evokes a response from the lung. This results in fibrosis – an irreversible disease. It paralyses the immune cells, which are involved in controlling the TB bacillii. Hence silicosis predisposes one to tuberculosis in some cases," Jaiswal said.

Although, unlike TB, silicosis is not accompanied by fever, blood in the sputum or the presence of TB bacilli in the lungs, normally such patients were given medicines used to treat TB, sometimes multiple doses that had the potential to expose them to certain undesirable side effects including hepatitis. "Here, we often give multiple counselling sessions to convince them that it is not TB that they are suffering from," Jaiswal said. But overall, the experience was that there was very little left to treat them with. "The dust causes irreversible damage. More often, they never get back to normal. We give them bronchial dilators for relief," he said.

According to him most of the



MADHAVAN

Homes of workers are located next to the mining site, putting entire families at risk.

workers were involved in stone masonry, quarrying, stone crushing and sandblasting. "The main problem is that it is the unorganised sector. The contractors never provide any masks or exhausts to ensure that the air current carrying silica dust is deflected away from the worker," Jaiswal pointed out. Most of them did not know whom they were working for. In contrast, workers in the organised sector are protected under the Employees State Insurance Scheme, which provides for a Respiratory Board to look into issues of compensation arising from ill-health at the workplace.

In the unorganised sector, work is done mostly on a contract basis. Workers are not listed in the rolls of the employer and they are unaware of the identity of the main employer, procured as they are by a *thekedaar* or contractor. Obviously, they are not entitled to any benefits and have to pay for their medical expenses from their own resources.

After having exhausted all possibilities including writing to the Ministries concerned at both the State and Central levels, PRASAR has now resorted to Public Interest Litigation (PIL). Its petition before the Delhi High Court, which is being argued by the Human Rights Law Network, has sought directions from the court for the constitution of a committee for the detection of silicosis among the residents of Lal Kuan; the issuance of appropriate guidelines for the prevention and treatment of silicosis and other incidental diseases; the rehabilitation of persons and families affected by the disease; compensation to the families of workers who died after contracting the disease; and alternative employment to the family members of victims.

There are national-level proposals for the unorganised sector, but none is ratifiable. The National Labour Commission (NLC) has recommended a policy on safety, health and environment at the workplace. Under the Factories Act, the managements are supposed to inform labour inspectors about the possibility of any health risks that might be involved. An Occupational Health and Safety Bill proposed by the NLC is still hanging fire. As no concrete legislation exists to protect the interests of workers in the unorganised sector, the onus is on the State governments and their respective Labour Departments to ensure that at least the minimum standards of safety are complied with at the workplace.

The International Labour Organisation (ILO) and the World Health Organisation (WHO) have come up with a joint programme for the elimination of silicosis. The programme identifies silicosis as a preventable disease, the incidence of which can be brought down through cost-effective programmes. Moreover, Article 4 of the ILO Convention on Occupational Safety and Health states that all member-states are required to formulate, implement and review a coherent national policy on occupational safety, occupational health and working environment in consultation with employees and employer organisations.

The unorganised sector is supposed to be covered under a piece of protective "umbrella" legislation as per the recommendations of the Second National Commission on Labour. But the enforcement of any such legislation will be contingent on tightening existing labour laws rather than making them flexible for employers. ■

It's about silicosis

It's also about not compensating suffering mineworkers

VIBHA VARSHNEY

SA Azad, coordinator of People's Rights and Social Research Centre (PRASAR) came to Lal Kuan village in the outskirts of Delhi in 1999 with a specific task in mind: making the villagers literate. In due course, he noticed a pattern: despite getting repeatedly treated for tuberculosis, villagers would die. Today, he can talk of nothing else but this problem and the dead ends he has reached trying to help the people.

He stops passing-by Budh Ram: this 37 year-old migrant from Rajasthan began work 20 years ago; a casual labourer, he worked around stone-crushing machines. About 10 years ago, he developed a breathing affliction and was treated for tuberculosis (TB) by the government TB dispensary in Nehru Nagar. This did not help; nor did treatment by mobile medical teams. Budh Ram became a truck driver, but fell ill once again four years ago. The TB drugs helped him for a year, but he has been deteriorating since.

It isn't TB

Says Budh Ram, "The medicines are not working. I cannot even walk." "Isn't it obvious that if three to four courses of TB medicines are not helping; the problem is not likely to be TB?" asks Azad. According to him, what affects Budh Ram is silicosis, common enough in the area's stone mining community. As silicosis cannot be cured, workers are generally given compensation. But authorities want proof that a workers indeed has silicosis, before stepping in with treatment. This leads to a catch-22 situation: while Azad collects information, mineworkers die, supposedly from TB.

In 1980 an All India Institute of Medical Sciences, Delhi, study had shown that silicosis was common in the Lal Kuan area. In 2001, PRASAR carried out a study; 146 people were interviewed and the result suggested that 83 of them could be silicosis-ridden. Confirmatory tests were needed then. While silicosis can be diagnosed on the basis of history and a simple X-ray, additional tests need to be done to ensure results cannot be nullified in court. A CT scan is required, but costs Rs 4,000, and even government hospitals do not provide it *gratis*.

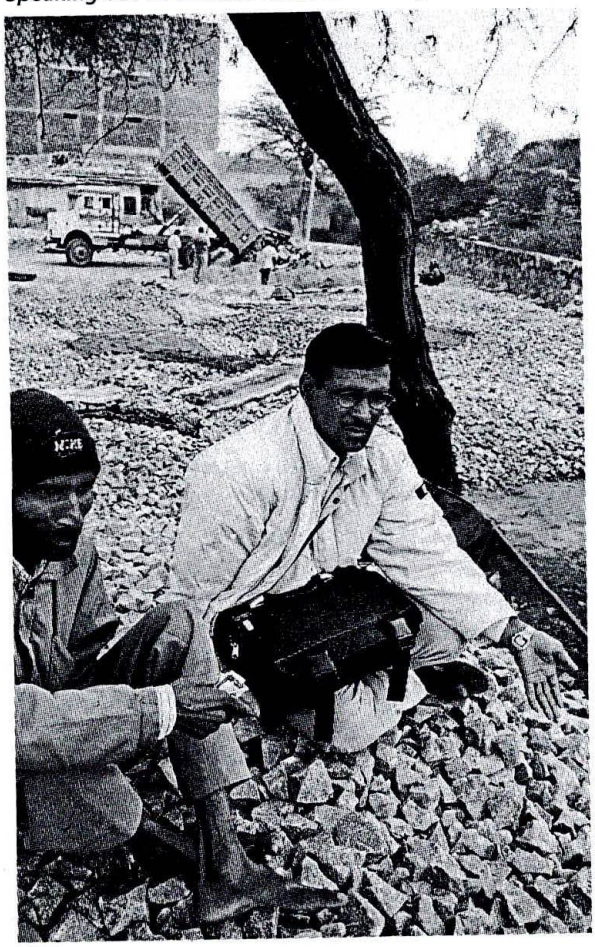
Indeed, Azad couldn't find a single hospital willing to waive off CT scan charges. Finally, the Lala Ram Sarup Institute — it treats tuberculosis and other respiratory diseases — in Mehrauli agreed to test 25 people. So far, only five cases of silicosis have been confirmed, Budh Ram among them. For the rest, the confirmatory test could not be carried out as they have silico-tuberculosis and the test can be done only when TB is controlled. Also, a petition filed in June 2003 by PRASAR and three other non-governmental organisations — Delhi Forum, Toxic links and Environmental Justice Initiative — along with the National Human Rights Commission (NHRC) has also reached a dead end. NHRC sent a copy of the complaint to the Secretaries of health, labour and industry, the labour commissioner, the Delhi government and its pollution control department. The complaint letter is dated 19th August, 2003; no one has responded.

Doctors least bothered

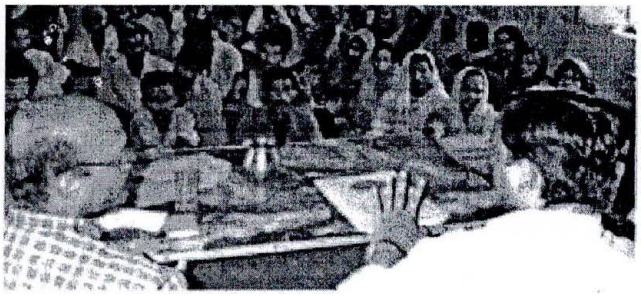
Even more disturbing, the medical fraternity is not bothered to find out why the same people are put on TB drugs, again and again. "The TB control programme anyway does not have a role if the disease is silicosis, and the patient will be referred to a specialist," says J N Banavaliker, head, department of TB and respiratory diseases, TB Control Office, Gulabi Bagh, Delhi. He says the department has never been informed of the silicosis problem in the area. The Lala Ram Sarup Institute regularly receives silicosis patients, but there is no mechanism to report these cases. "The TB doctors are just not willing to listen to the patients — all they are interested in is meeting targets," says Azad., "It seems the whole procedure is being made prohibitive under pressure, so that compensation does not have to be given," says Souparna Lahiri, coordinator, Delhi Forum.

How should this problem be resolved? The quarrying business should be regulated, says Lahiri. Government funding could help create a database on the problem, feels Anand Jaiswal, chest physician at the Lala Ram Sarup Institute. Meanwhile, there's no respite for mineworkers. ■

Speaking out on silicosis: Budh Ram and S Azad



RUHANI KAUR / CSE



Succumbing to stone-cutting

Gopal Krishna reports on the heavy price being paid by stone-cutters of the Lalkuan area of New Delhi.

Spread The Word

February 2004 - Narayani, Chanda and Ghashi are battling for their lives. One of them is about to die. All of them are in a serious condition, suffering from silicosis. In time, they will have complete respiratory failure. These villagers of Lalkuan, near the Badarpur-Mehrauli Road in Delhi, require urgent medical attention. People's Rights and Social Research (PRASAR) has taken up this issue.

Silicosis is one of the oldest known occupational diseases caused by the inhalation of particles of silica, mostly from quartz in rocks, sand and similar substances. It is a progressive disease that belongs to a group of lung disorders called pneumoconiosis. It is identified by the formation of lumps (nodules) and fibrous scar tissues in the lungs. Narayani, Chanda and Ghashi got affected by this deadly disease due to exposure while stone-cutting. There have been others who have already succumbed to this disease. Since these workers were contract workers, they were not covered under the Employees State Insurance (ESI) scheme and have been denied compensation under the Workmen's Compensation Act, 1923.

Combined meeting organised by Central Board for Workers Education to educate people on occupational health issues.

Free crystalline silica, is one of the most common minerals in the earth's crust. It is found in sand, many rocks such as granite, sandstone, flint and slate, and in some coal and metallic ores. The three most common forms are quartz, tridymite and cristobalite. Inhaled crystalline silica (in the form of quartz or crystobalite) is classified by the International Agency for Research on Cancer (IARC) as a Group 1 human lung carcinogen. One of the hazardous occupations that exposes laborers to such danger is stone-cutting.

The National Human Rights Commission (NHRC) took cognisance of a complaint lodged by PRASAR in mid-2003. The NHRC had directed that a copy of the complaint be sent to the Secretaries of the Union Health, Labour and Industry Ministries, the Labour Commissioner, the Government of the National Capital Region of Delhi and the Director, Pollution Control Department, Delhi. These agencies were asked to look into the allegations contained, and to submit their comments and an Action Taken Report within four weeks of receipt of NHRC's letter of August 19, 2003.

None of the departments mentioned have responded. The NHRC has sent a reminder to the departments concerned and these departments were to respond by 12th February 2004.

Stone-cutting had gone on in Lalkuan for more than 35 years till the Supreme Court of India ordered for the removal or dislocation of the crushers in early 1990s. "Hundreds of stone-crushers were causing serious cough and respiratory diseases including tuberculosis among several thousands of people in the Tughlakabad area of New Delhi," says Professor T. Shivaji Rao, Director, Centre for Environmental Studies, Gitam Engineering College, Visakhapatnam. Contractors sell the stones to the government, builders and common house holders.

"I visited the site along with M.C. Mehta and prepared a technical report on the problem and the same was presented to the Supreme Court through a public interest litigation filed by Mehta. As a result, several hundred stone quarries were ordered to be shifted to other safer places outside New Delhi by the Supreme Court." It defies understanding how a shift of stonecrushers to 'safer places' makes it safe. These crushers have been shifted to Haryana, where a similar situation is bound to occur sooner or later.

> "We would therefore hold that where an enterprise is engaged in a hazardous or inherently dangerous activity and harm results to anyone on account of an accident in the operation of such activity..., the enterprise is strictly and absolutely liable to compensate all those who are affected...,"
>
> -- The Supreme court

Hundreds of stone-cutters in Lalkuan, who were involved in stone-cutting to cater to the needs of infrastructure development of the city in the early 1990s, suffer from silicosis. Participatory Research in Asia (PRIA) and PRASAR had done a study in 2001 to gauge the extent of affected workers, based on interviews

of 155 respondents and 58 oral autopsies. According to a paper by S.K. Sharma, J.N. Pande and K. Verma, Assistant Professors in the Department of Medicine at the All India Institute of Medical Sciences, published in the Indian Journal of Chest Diseases and Allied Sciences, October-December 1988, broncho-alveolar lavage fluid (BALF) analysis found the presence of silicosis in six patients.

Silicosis happens in several others industries besides stone-crushing. It is prevalent all over India. Similar cases have been reported in Pondicherry and Gujarat. In Orissa, stone crushing in Jajpur district has caused air, water and soil pollution. Diseases and deaths are rampant amongst the workers who are usually unorganized migrants from tribal districts like Keonjhar and Mayurbhanj. Nearly fifty villages which have been badly affected because of this activity of 500 crusher units. The WHO has confirmed the prevalence of silicosis among those engaged in the quarrying of shale sedimentary rock.

A meeting on Occupational and Environmental Health was held at the offices of Toxics Link in New Delhi, in August last year during which S.A.Azad of PRASAR made a presentation on the plight of the victims of the stone-crushing industry. He sought the support of the civil society groups present to launch a campaign to seek remedy for the silicosis victims. Toxics Link has been working on the environmental and occupational hazards resulting from toxics such as asbestos. Participants at the August meeting included Dr T.K. Joshi, Dr Sanjay Chaturvedi, A.T. Dudani, Ravi Agarwal, Nasir Atiq, Sunita Dubey, Ravinder Roy, Praveen Mote, Alpana, S.A. Azad and Gopal Krishna.

Stone-crushing can be carried in a safe manner by wetting the rocks before breaking and crushing and using modern machinery to minimize dust generation. Silicosis can be prevented by avoiding inhalation of dust containing free crystalline silica. Hence, preventing the formation and escape of dust is key. In the late 1930s, machine based dust control measures were introduced in developed countries like US in the late 1930s and by late 1960 the cases of Silicosis had almost vanished. In Switzerland, stricter controls in the 1970s and 1980s led to approximately six-fold reduction in the number of silicosis cases per year.

In India, contractors are not incorporating higher and less hazardous working standards into their process, despite the Supreme Court ruling. Profits have replaced worker safety and many workers have thus been failed by the system. Even records for occupational diseases are not maintained. The plight is best uunderstood from the fact that there are only 4 factory inspectors for whole of Delhi.

For the moment, the people of Lalkuan have lost all hope of receiving any compensation for being affected by such a deadly disease. Several civil society groups are stressing on the need for a public hearing on the issue. ⊕

Gopal Krishna
February 2004

Gopal Krishna is with Toxics Link, New Delhi. This article is based on material from Toxics Link and is made available through Space Share, our content-sharing program for publishers of other public-interest content. Click here to learn more about Space Share.

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