El enfoque de ecosistemas para la salud humana frente a la globalización

Ecosystems approach to human health in the face of globalization

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biosphere
  global ecosystem
  regional ecosystem
  local ecosystem
  community
  house & workplace

Health & well-being

biological factors
geophysical milieu
toxic substances
socio-political situation
economy
culture

(adapté de Neilson, 2000)
Ecosystem approach to human health

- Researches the **dynamic interactions** between socio-political, cultural and economic factors, the different components of the biogeochemical environment and human health and well-being;
- Integrates **gender-based** concerns and analyses and participative methods;
- Requires new disciplinary and transdisciplinary **methodologies** to examine and combine these various elements;
- With a finality of seeking viable short, medium and long term **solutions**.
Dynamic Interactions

- Policy decisions and mercury pollution in the Brazilian Amazon (UQAM-UFRJ-UFPa)
- Externalisation of labour in Chile (Centro de Estudios de la mujer)
- The pathways of lead from Peru to Ecuador (FUNSAD, Ecuador)
Gold market migration & colonisation policies

mercury in water

methylmercury poisoning in humans

slash & burn agriculture

methylmercury poisoning in fish

deforestation, erosion & silting

mercury in water

methylmercury poisoning

miners

riverine settlers

migrants & colonisation policies

mercury in water

methylmercury poisoning in humans
Agriculture => Deforestation => Erosion
PARA DIMINUIR O MERCURIO QUE ESTÁ NO SEU CORPO, COMA OS PEIXES QUE SÃO POUCO CONTAMINADOS

PEIXES MUITO CONTAMINADOS

PEIXES MAIS OU MENOS CONTAMINADOS

PEIXES POUCO CONTAMINADOS

UMA PORÇÃO DE PESCADA CONTEM A MESMA QUANTIDADE DE MERCURIO QUE 5 PORÇÕES DE SURUBIM E QUE 10 PORÇÕES DE ARACU

Projeto CARUSO - Universidade Federal do Pará (UFPa) - Universidade do Québec en Martinique (UQAM) - Centro de Pesquisa para o Desenvolvimento Internacional (CIRD) do Canadá
## Fish consumption (1995-2000)

<table>
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<tr>
<th></th>
<th>1995</th>
<th>2000</th>
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<tbody>
<tr>
<td></td>
<td>123 fish meals/wk</td>
<td>122 fish meals/wk</td>
</tr>
<tr>
<td>common carnivores</td>
<td>59 (48%)</td>
<td>21 (18%)</td>
</tr>
<tr>
<td>common herbivores</td>
<td>20 (16%)</td>
<td>64 (52%)</td>
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</tbody>
</table>
Hair mercury levels over time

Women’s hair mercury (ppm)

04/94 04/95 04/99 04/00

Intervention
Current studies

- Long term health effects (neurologic, cardiovascular) and well-being;
- Fruit consumption and mercury absorption;
- Interaction between selenium and mercury;
- Factors that control methylmercury uptake in fish and fishing practices;
- Information flow and communication networks within the communities (gender & social equity);
- Soil use and agricultural practices (farmers, local and governmental agencies).
Maximise sustainable use of the natural resources (forest, land, fish) and minimize toxic risk
Externalisation of labour in Chile
(Centro de Estudios de la Mujer)
Chili: structural readjustment: externalisation of work......

...and pollution

Shoe manufacturing plant

Interface

sub-sub contracting home work
The pathways of lead...
Correlation between blood lead levels and gasoline lead levels

(Thomas et al, 1999)
From Peru to Ecuador (FUNSAD, Ecuador)

In Peru: recycling of imported and local old car batteries

Families use the lead to manufacture pots and pans

Pots and pans sold on the informal market locally and/or in neighbouring countries

Pb in the environment

Pb exposure in working children & adults

Lead intoxication

High Pb exposure in a small village in Ecuador
Integrating gender

Women & pesticide exposure: an example from South Africa

Gender-based standards in the flower industry and maquila in Central America
Pesticides, social justice and women agricultural workers in South Africa:
A developing country perspective

Leslie London

Occupational and Environmental Health Research Unit, University of Cape Town

Presentation for the IDRC Lecture Series - Ecosystems Approaches to Health, February 2001

Acknowledgements: Andrea Rother, Tracey Prinsloo, Ross Bailie, Sophie Kisting
Pesticide Poisoning Notifications in South Africa

- About 100 to 150 cases per year
- Under-reporting 5 to 20%
- Brunt of poisoning falls on most marginalised
Pesticide poisoning notification rates per 100,000: results of intensified surveillance.
Gender profile of pesticide poisoning - routine versus intensified surveillance
Women often not recognized as workers, but occasional “helpers”

Women’s occupational exposures are not lower: high-risk but low-skill practices given to women; piece work, seasonal labour often more dangerous

Residues on food, in water, in air

Wash contaminated clothing

Women spend more time in the home exposed to domestic pesticides and those used for Malaria control
Gender and health

- Women’s occupational health problems are systematically ignored
- Lack of gendered diagnostic skills
- Symptoms often attributed to Mass Hysteria
- Same health problem experienced differently for men
- Poisoning may be understood as bewitching
- If infertility effect → women bear the brunt, even if man affected
Development of a protocol for gender-based standards in the flower industry and maquilas

- Standards have been traditionally developed with respect to male-dominated industries.
- A gender-based approach takes into account not only biological differences but also the fact that men and women occupy different jobs, working conditions and social roles.
- Women workers bring to the forefront the interaction between the spheres of production and reproduction, which are not normally addressed in standard setting, with the notable exception of pregnancy.
The cycle of environmental disease

1. Newborn: underweight.
2. Birth to six months: protection gained from breast milk can be diminished if mothers are overworked and undernourished.
3. Six months to two years: poverty and lack of parental knowledge can mean inadequate solid foods and unhygienic living environment.
4. Age three: listless child does not demand stimulation. Frequent infections due to weakened immune system and unsafe environment.
6. Teenager to adult: low-paid job, or lack of strength, cannot obtain adequate diet.
7. Adult: poor diet and heavy workload for pregnant mothers.

Using Indicators to Measure Progress on Environmental Health, WHO, UNEP, 2002
Methodology

Early alterations to health and well-being
A continuum of deterioration

early changes in exposed groups → sub-clinical signs and symptoms in individuals → illness

Exposure dose
Enlarging the focus

early changes in exposed groups → sub-clinical signs and symptoms in individuals → illness

collective health and well-being ← individual pathology

reduction of exposure and prevention ← therapeutic intervention and compensation

potentially reversible ← irreversible
Methodological considerations

early changes in exposed groups \rightarrow sub-clinical signs and symptoms in individuals \rightarrow illness

sensitive tests of subtle changes in performance \rightarrow specific diagnostic criteria

continuous variables \rightarrow dichotomous data

possibility to carry out studies on small populations \rightarrow large populations (or very high exposures)
Highlights of ecosystem approach

- Provides a means for integrating occupational and environmental research
- Combines natural, social and health sciences, with community participation
- Leads to unexpected discoveries
- Fosters empowerment and gender and social equity
- Identifies pathways for viable actions on short, medium and long term bases
- Cost effective due to sharing
The Canadian International Development Research Centre (IDRC) and Institutes for Health Research (CIHR) have issued a call for proposals for the creation of a COPEH with Latin America.

We* are proposing to construct a COPEH whose main objective is to advance ecosystem approaches in research, policy and practice in the area of toxic exposures and human health by strengthening scientific capacities, communication and understanding.

* R. Arroyo (Peru), O. Betancourt (Ecuador), J-R Guimarães (Brazil), J. Medel (Chile), D. Mergler (Canada), M-H Rodriguez (Mexico), C. Wesseling (Costa Rica)
Taller (SALA 1; HORA : 16h00-17h30)

Objetivos:
- Discutir el enfoque ecosistémico para la salud humana a partir de experiencias concretas de los participantes.
- Discutir las necesidades y de la estructura de una comunidad de práctica en ecosistemas y salud.

Agenda:

Presentación de dos experiencias en América Latina:
- Julia Medel (Chile) : Organización piramidal del calzado y los efectos en la salud.
Objectivos:

- Discutir el enfoque ecosistémico para la salud humana a partir de experiencias concretas de los participantes.
- Discutir las necesidades de la estructura de una comunidad de práctica en ecosistemas y salud.

Agenda:

- Presentaciones: Julia Medel (Chile): Organización piramidal del calzado y los efectos en la salud; Ruth Arroyo (Perú): Minería en la cuenca de Rimac: impacto ambiental y en salud.
- Discusión de las investigaciones de los participantes en el taller.
- Debate de necesidades, objetivos y estructura para la construcción de un Comunidad de Práctica
World Summit on Environment and Development

“Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature”

Rio Declaration, 1992
In her book ‘Silent Spring’, published in 1962, Rachel Carson warned the world that serious damage was being done to the environment and human health by the uncontrolled use of pesticides, in particular DDT.
Globalization

- Increasing number of countries where neurobehavioral methods are being used;
- Increasing interest to culturally adapt methods to different areas of the globe;
- Increasing exchanges between researchers from industrialized and non-industrialized countries.
Collective health: Neurobehavioral studies demonstrated that it was possible to measure changes in nervous system functions in relation to exposure, prior to the development of illnesses.
Future directions

- Improve the interface between workplace and environmental studies
Future directions

- Improve the interface between workplace and environmental studies
- Develop a life span approach to examine total toxic load with a gender perspective
Life span approach

Childhood experiences

In utero

Childhood growth

Puberty

Working and family life

Adolescence

Menopause

Andropause

Retirement

Reproduction

Reproduction, pregnancy, breastfeeding,

Old age
North-South Collaboration
Future directions

- Improve the interface between workplace and environmental studies
- Develop a life span approach to examine total toxic load with a gender perspective
- Better integrate studies from the North and the South.
- Establish closer links to other disciplines, using an ecosystem approach to identify the sources and context of exposure and impact with a view to proposing local and global solutions.
Future directions

- Improve the interface between workplace and environmental studies
- Develop a life span approach to examine total toxic load with a gender perspective
- Better integrate studies from the North and the South.
Participatory research

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<td>contractual</td>
<td>Biogeochemical studies</td>
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<tr>
<td>consultative</td>
<td>Fish diet, mercury exposure and health effects</td>
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<tr>
<td>collaborative</td>
<td>Project to reduce mercury exposure</td>
</tr>
<tr>
<td>collegiate</td>
<td>Not attained since researchers have control</td>
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(Mertens et al, in press)
An ecosystem approach to lead and health

- Old paint
- Industrial wastes
- Gasoline additive
- Old pipes

Lead in air, water and food

- Children’s blood lead
- Nutritional status

- Children’s IA
- Mother’s IA

- Socio-economic situation

IA: intellectual ability
Other influences

- Early changes in exposed groups
- Sub-clinical signs and symptoms in individuals
- Illness

Other influences include:
- Age (fetus, children, and elderly more vulnerable)
- Lifestyle (alcohol, cigarettes, drug abuse)
- Nutrition
- Living & working conditions
- Pre-existing illness
- Genetic susceptibility
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<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>D</th>
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<tr>
<td>Mean blood Pb</td>
<td>2.2</td>
<td>7.0</td>
<td>9.0</td>
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<tr>
<td>MMR/1000</td>
<td>1.1</td>
<td>13.2</td>
<td>10.2</td>
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<tr>
<td>Attributable CV mortality</td>
<td>2</td>
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