

**4th INTERNATIONAL CONFERENCE
ON CHILDREN'S HEALTH AND THE ENVIRONMENT**
Reducing environmental risks for our children

Vienna, 10th of June – 12th of June 2007

Location: Medical University of Vienna, Austria

Book of abstracts



Edited by the International Network on Children's Health, Environment and Safety (INCHEs), by the Institute of Public Health, located at the University for Health Sciences, Medical Informatics and Technology (UMIT) Hall in Tirol, Austria and by the Institute of Environmental Health (ZPH) located at the Medical University of Vienna, Austria

4th INTERNATIONAL CONFERENCE ON CHILDREN'S HEALTH AND THE ENVIRONMENT

This conference - the fourth after Amsterdam (1998), Washington (2001) and London (2004) - is initiated by the International Network on Children's Health, Environment and Safety (INCHES) in collaboration with the University for Health Sciences, Medical Informatics and Technology - Dept. of Public Health, Medical Decision Making and Health Technology Assessment, and the Medical University of Vienna, Institute of Environmental Health. This conference offers a world-wide platform dealing with health problems of children caused by important environmental influences.

The objectives of this conference are:

- to provide an international forum for the latest research findings in paediatric environmental health;
- to provide insight in the activities in the field of science and policy interface;
- to define the relationship between environmental contaminants and children's health in the world;
- to identify opportunities to minimise childhood exposure to environmental contaminants;
- to build a multi-sectoral platform of knowledge at an international level;
- to develop a greater awareness among health professionals about children's health and the environment;
- to initiate policy review and future directions in research in the field of children's environmental health;
- to renew old friendships and initiate new ones;
- the conference should target the global one, risks from environmental hazards for children from all over the world

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First Edition

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ACKNOWLEDGEMENT

The Organizing Committee would like to thank all individuals who have worked so hard to make this conference a success.

We wish to thank especially the international scientific committee and all co-organisers who offered up a lot of time preparing the conference.

A special thank you goes to Mr. Reinhold Rieger for his support and his many interesting and motivating ideas for the social events. The Ministry of the Environment and the City of Vienna were also extremely helpful in this area – thank you. Also a very special thank you goes to our host, the Medical University of Vienna for the wonderful rooms and hospitality. For all the travel and hotel arrangements we had the brilliant help of Mrs Gerda Knorr (FCM-DER Travel Solutions). Without her help we would have been lost!

The Organizing Committee would also like to thank the Institute of Public Health located at the University for Health and Sciences, Medical Informatics and Technology Hall in Tirol, Austria (UMIT) and the Institute of Environmental Health located at the Medical University of Vienna, Austria (ZHP). Both Institutes have rendered this project possible. Of course without the excellent and competent assistance and engagement from Ms. Julia Hellmann and Ms. Thuy Linh Cao, this Conference would not have been so well organized. Thank you for your “cool heads” in the midst of all the organising stress!

Last but not least. This conference has benefited from the generous support from sponsors, whether through directed sponsorship for specific events; travel expenses for under-represented groups or to defray general costs. Thank you.

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Front cover photo: Children in Zimbabwe from a gold mining area, with high exposure to mercury.
Credit: Stephan Boese-O'Reilly

WORDS OF WELCOME

Word of welcome

In recent years environmental health has evolved into a broad interdisciplinary field with important contributions from university based research, valuable input from applied environmental and life sciences as well as from medical practitioners and public health institutions. Children as a vulnerable part of society have always been a main focus of environmental health, of protection and prevention measures. That already the 4th International Conference on Children's Environment and Health (ICCEH4) is taking place underlines the importance of these topics for society and policy making. Vienna was chosen as the venue of this conference acknowledging the active part the Austrian government has taken for many years in the European negotiations and deliberations that resulted in the Children's Environment and Health Action Plan for Europe (CEHAPE). At the Intergovernmental Midterm Review during these days in Vienna the further national implementation of CEHAPE will be discussed and ICCEH4 is organised back to back to this important European event. We express our hope that this will support and intensify the important exchange between science and politics.

The Medical University of Vienna has a long tradition of environmental health sciences and the Institute of Environmental Health founded in 1972 has contributed to this tradition. We believe that hosting ICCEH4 in Vienna will strengthen the commitment for an even stronger involvement in environmental health research and practice. In particular the problem of preserving and improving environmental conditions for the benefit of our children and future generations under the pressure of economic rationality will be a great challenge. Thus we wish the conference to be successful not only for the sake of the participants and their standing in the scientific community. We are confident that the city of Vienna with its cultural attractions is an asset of this conference and that you will remember the conference not only for its scientific sessions alone. We gratefully acknowledge the excellent preparation of the program by Stephan Böse-O'Reilly and his team and thank all the authors for their contributions. We are looking forward to an exciting scientific meeting.

Hanns Moshhammer and Michael Kundi

Word of welcome

The International Network on Children's Health, Environment and Safety is proud to be the organiser of the 4th International Conference on Children's Environmental Health. In the University for Health Sciences, Medical Informatics and Technology (UMIT) in Hall in Tirol and the Medical University of Vienna we have found two very capable organisers of this conference.

This conference, the fourth after Amsterdam (1998), Washington (2001) and London (2004) is located in Vienna. Again a large group of professionals of different disciplines is coming together to explore the latests scientific and policy related aspects of children's environmental health. The conference will provide an international forum for researchers, policy makers, practitioners, and children's environmental health advocates, and will offer a unique platform for everyone interested in the situations and possibilities of children growing up in the environment.

We want to thank all participants and chairpersons for their efforts to make the conference successful. We would like to express a special appreciation to the Secretariat of the conference – Ms. Julia Hellmann and Ms. Thuy Linh Cao – who helped greatly in the organisational aspects.

It is our sincere wish that the 4th International Conference on Children's Environmental Health meets with your expectations, and that your stay in Vienna is a pleasant one.

Peter van den Hazel
Chair of the board of INCHES

**4th INTERNATIONAL CONFERENCE
ON CHILDREN'S HEALTH AND THE ENVIRONMENT**

Contents

1. Organising and scientific committee (page 1)
2. Preliminary scientific programm (pages 2 - 12)
3. Presentations (pages 13 - 97)
4. Posters (pages 98 - 140)
5. Author Index (pages 141 - 147)
6. Cooperations (pages 148 - 149)
7. Financial support (page 149)

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Preliminary scientific programm

Precon- ference Saturday	9th of June	Institute of Hygiene and Environmental Medicine (Hygiene Institut), 1095 Wien	Kinderspitalgasse 15, lecture room 2nd floor
	Workgroup	ISDE general assembly	Lilian Corra / Argentina
19.00 - 22.00	Dinner reception	12 Apostelkeller	

Sunday	10th of June	Medical University of Vienna (Medizinische Universität), 1090 Wien	Schwarzspanierstras se 17, lecture rooms
09.00 – 10.00	Registration		
10.00 – 10.30	Plenary	Welcome address	
		INCHES	Peter van den Hazel / Netherlands
		University for Health Sciences, Medical Informatics and Technology, Hall	Uwe Siebert / Austria; Stephan Boese-O'Reilly / Austria
		Institute of Environmental Hygiene Vienna	Michael Kundi / Austria, Hanns Moshammer / Austria
10.30 - 12.30	Plenary	Environmental risks for our children	Chair: Lilian Corra / Argentina
	10.30-11.00	Global risk for children's health	Maria Neira / Switzerland (WHO)
	11.00-11.30	Burden of disease and children's environment	Giorgio Tamburlini / Italy (not confirmed)
	11.30-12.00	Designing and building healthy places for children	Howard Frumkin / USA (ATDSR)
	12.00-12.30	Nanotechnology	Vyvyan Howard / UK (ISDE)
12.30 – 13.30	Lunch		
13.30 – 15.00	Symposium	Air pollution – new aspects	Chairs: Hemsing Hurrnag / Mauritius; Joachim Heinrich / Germany
	13.30-13.45	Fine particles, a major threat to children	Joachim Heinrich / Germany
	13.45-14.00	Asthma and environment	Ondine von Ehrenstein / USA
	14.00-14.15	Changing trends of asthma prevalence and seasonal variations in children	H. Paramesh / India
	14.15-14.30	Respiratory health of Austrian school children	Hanns Moshammer / Austria
	14.30-14.45	Asthma and the hygiene hypothesis	James Seltzer / USA
	14.45-15.00	<u>Discussion</u>	<u>Chairs: Hemsing Hurrnag / Mauritius; Joachim Heinrich / Germany</u>
13.30 – 15.00	Symposium	Children's environmental health indicators (CEHI) - shaping priorities for action - part 1	Chair: Howard Frumkin / USA (CDC)
	13.30-13.45	Opening remarks	Martha Berger / USA (EPA)
	13.45-14.00	Making the case for action - The global initiative on children's environmental health indicators" - review on progress since WSSD	Fiona Gore / Switzerland (WHO)
	14.00-14.15	CEHI in the United States and North America	Daniel Axelrad / USA (EPA)
	14.15-14.30	CEH indicators in Canada	Susan Ecclestone / Canada (Health Canada)
	14.30-14.45	CEHI at the US / Mexico border	Sally Edwards / USA (PAHO)
	14.45-15.00	<u>Discussion</u>	<u>Chair: Howard Frumkin / USA (CDC)</u>

13.30 – 15.00	Workgroup	The Use of the Internet for Children's Health & the Environment - with practical training	Workshop by: Jerome Paulson /USA
15.00 - 15.15	Break		
15.15 - 16.15	Symposium	Fetal and embryological origin of diseases	Chairs: Janna Koppe / Netherlands, Wojciech Hanke / Poland
	15.15.-15.30	Perinatal dioxin exposure in the Netherlands: the Amsterdam-Zaandam cohort, and a 15 year follow-up	Janna Koppe / Netherlands
	15.30-15.45	Evidence of environmental translocation from mother to foetus	Antonietta M. Gatti / Italy
	15.45-16.00	WHO activities on reproductive health and environment	Marie-Noel Brune / Switzerland (WHO)
	16.00-16.15	<u>Discussion</u>	<u>Chairs: Janna Koppe / Netherlands, Wojciech Hanke / Poland</u>
15.15 – 16.15	Symposium	Children's environmental health indicators (CEHI) - shaping priorities for action - part 2	Chair: Howard Frumkin / USA (CDC)
	15.15.-15.30		Dafina Dalbokova / Germany (WHO)
	15.30-15.45	CEH policy indicators - A case study of UV readiation	Eva Kunseler / Finland
	15.45-16.00	Reporting on environmental chemicals and children's health - A case study of POPs in human breast milk	Nida Besbelli / Germany (WHO EURO)
	16.00-16.15	<u>Discussion</u>	<u>Chair: Howard Frumkin / USA (CDC)</u>
15.15-16.15	Symposium	Cancer	Chair: Michael Kundi / Austria
	15.15.-15.30	Incidence trends on childhood cancer	Charles Stiller / UK
	15.30-15.45	Childhood and cancer	Michael Kundi / Austria
	15.45-16.00	Early exposure to chemical additives on food and cancer	Morando Sofritti / Italy (not confirmed)
	16.00-16.15	Flemish project on biomonitoring and carcinogens	Nicolas van Larebeke / Belgium
16.15 - 16.30	Break		
16.30 - 18.00	Symposium	Toxic metals	Chair: Christian Beinhoff / Austria
	16.30-16.45	Exposure to arsenic and chromium on children playgrounds	Stephan Gabos / Canada
	16.45-17.00	Arsenic in drinking water and its toxicological impact on human health	Vinod Jena / India
	17.00-17.15	Environmental exposure to platinum-group metals released by automotive catalytic converters: the case of urban youngsters of the city of Rome.	Marcelo Enrique Conti / Italy
	17.15-17.30	Mercury in breast milk – a health hazard for infants in gold mining areas?	Beate Lettmeier / Austria
	17.30-17.45	Health hazard mercury for children in gold mining areas	Stephan Boese-O'Reilly / Austria
	17.45-18.00	Halting the child brain drain: Stopping global mercury contamination,	Genon Jensen / Belgium (HEAL)
16.30 - 18.00	Symposium	Children's environmental health indicators (CEHI) - shaping priorities for action - part 3	Chair: Howard Frumkin / USA (CDC)
	16.30-16.45	CEH indicator development for Argentina under CEH profile (Perfil SANA) in collaboration with Argentinean government, the Society of Paediatrics of Argentina, academis and NGO's	Lilian Corra / Argentina / (SDE)
	16.45-17.00	CEHI in the Eastern Mediterranean Region	Hamed Bakir / Jordan (WHO)
	17.00-17.15	Oman - a case study	Salim Al Wahaibi / Oman
	17.15-17.30	Tunisia - a case study	Nedhif Mabrouk / Tunisia
	17.30-17.45	Turning indicators into action: beyond indicators - interventions for Tunisia	Sophie Bonjour / Switzerland (WHO)
	17.45-18.00	<u>Discussion</u>	<u>Chair: Howard Frumkin / USA (CDC)</u>

16.30 - 18.00	Workshop	Tobacco smoke and children	Chair: James Seltzer / USA
	16.30-16.45	Environmental tobacco smoke exposure of German children - GerES IV - situation in Germany	Andre Conrad / Germany
	16.45-17.00	Children's exposure to second hand smoke in the US: estimates from time use survey data	Michael Keall / New Zealand
	17.00-17.15	Smoking relapse prevention - intervention study for postpartum women in Lodz, Poland	Kinga Polańska / Poland
	17.15-17.30	Nicotine effects in pregnancy and childhood	Manfred Neuberger / Austria
	17.30-17.45	Tobacco use: Prime environmental health concern among children in Russia	Andrey K. Demin / Russia
	17.45-18.00	<u>Discussion</u>	Chair: James Seltzer / USA
18.00 - 19.00	Break	Inches Reception	
19.00 - 22.00	Social event	Classical Music: Concert at the University and INCHES reception	

Monday	11th of June	Medical University of Vienna (Medizinische Universität), 1090 Wien	Schwarzspanierstrasse 17, lecture rooms
08.30 – 10.30	Plenary	Best practices - review on the state of art	Chairs: Stella Canna-Michaelidou / Cyprus; Peter van den Hazel / Netherlands
	08.30-09.00	Safer chemistry curriculum: Taking steps towards health promoting schools in the Philippines	Irma Makalinao / Philippines
	09.00-09.30	Pollution reduction options network	Peter van den Hazel / Netherlands
	10.00-10.30	Children and chemical safety: framework for action to protect children from harmful exposures	Stella Canna-Michaelidou / Cyprus
08.30 - 11.00	Workgroup	Chemicals Health Monitor	Workshop by: Genon Jensen / Belgium (HEAL)
10.30 - 11.00	Break		
11.00 - 12.30	Symposium	Indoor air	Chair: Michal Krzyzanowski / Germany (WHO Euro)
	11.00-11.30	Development of WHO guidelines on indoor air quality	Michal Krzyzanowski / Germany (WHO Euro)
	11.30-11.45	Evaluation of microclimate indices in some preschools and schools institution in Tirana City - Albania	Elida Rahmani / Albania
	11.45-12.00	Indoor air pollution and prevalence of respiratory infection in children under 5 years – A rural study in India	Elizabeth Cherian / India
	12.00-12.15	Respiratory symptoms of school children and their home environment	Peter Rudnai / Hungary
	12.15-12.30	The health effects of mold in children	James Seltzer / USA

11.00 - 12.30	Symposium	Lead	Chairs: Jenny Pronczuk / Switzerland (WHO), Paul Dargan / UK
	11.00-11.15	Blood lead levels and related risk factors among children aged 0-6 years in China	Zhang / China
	11.15-11.30	The Pb level in blood of children in Copper Basin, Poland - thirty years of observation	Halina Strugała-Stawik / Poland
	11.30-11.45	Effect of environmental lead on the health status of women and children in developing countries	Thuppil Venkatesh / India
	11.45-12.00	Heavy metal poisoning from traditional medicines	Paul Dargan / UK
	12.00-12.15	Lead in ceramics in Paris	Frederic Sorge / France
	12.15-12.30	Low blood lead levels and the cognitive development of children from different localities in Malaysia	Jamal Hisham Hashim / Malaysia
	12.30-12.45	Lead - from toxicology to epidemiology	Tee Guidotti / USA
11.00 - 12.00	Workshop	The results of the Children Environmental Survey Germany and their implications for prevention specially through NGOs	Chair: Erik Petersen / Germany
	11.00-11.15	The Results of the Children Environmental Survey Germany and their implications for prevention	Andre Conrad / Germany (UBA)
	11.15-11.30	Up grade courses for pediatric medical assistants and nurses: latest results of the evaluation of the past three years	Julia Hellmann / Germany
	11.30-11.45	Training Health Care providers in Germany in environmental medicine - an overview and a perspective	Erik Petersen / Germany
	11.45-12.00	<u>Discussion</u>	<u>Chair: Erik Petersen / Germany</u>
12.30-13.30	Lunch		
13.30 - 14.30	Symposium	Neurodevelopmental disorders	Chairs: Janna Koppe / Netherlands, Wojciech Hanke / Poland
	13.30-13.45	Mercury neurotoxicity as a paradigm of developmental hazards	Philippe Grandjean / Denmark
	13.45-14.00	Arsenic in drinking water in South Asia and cognitive development	Ondine von Ehrenstein / USA
	14.00-14.15	PCB-related neurodevelopment deficit in children and its potential mediation by endocrine disruption	Gerhard Winneke / Germany
	14.15-14.30	Identification of health effects related to environmental neurotoxic agents	Sandra Ceccatelli / Sweden
13.30 - 14.30	Symposium	Children and physical hazards	Chairs: Lilian Corra / Argentina (ISDE); Zalina Hashim / Malaysia (not confirmed)
	13.30-13.45	Electro magnetic fields	Gerd Oberfeld / Austria
	13.45-14.00	Children and mobile phones	Matthias Otto / Germany
	14.00-14.15	Exposure of children to noise in different settings – PINCHE's policy recommendations	Wolfgang Babisch / Germany
	14.15-14.30	Environmental noise exposure and hearing thresholds of school children in Kuala Lumpur, Malaysia	Zalina Hashim / Malaysia

13.30 - 14.30	Workgroup	Symposium: Children in Complex Disaster Situations	Chair: Irma R. Makalinao / Philippines
		Understanding the unique vulnerabilities of children during a hazardous material incident response	Irma R. Makalinao / Philippines
		Children in complex disaster situations in the Philippines: A first responder's perspective	Jose S. Embang, Jr / Philippines
		Lessons learned from a chemical spill in a Makati City high school: Creating policy to protect children's health	Jejomar Erwin Binay Jr / Philippines
14.30 - 15.00	Transfer to Hofburg to NGO conference	Hofburg, 1010 Wien	Josefsplatz 3, Redoutensäle
15.00 - 15.45	Plenary	Children's Health and the environment	Chair: Sascha Gabizon / Germany (WECE), Genon Jensen / Belgium (HEAL), Hanns Moshhammer / Austria,
	15.00-15.45	Long-term consequences of developmental exposure to neurotoxicants	Philippe Grandjean / Denmark
15.45 - 16.45	Symposium		HEAL session
		RPG I: Gastrointestinal diseases – drinking water and sanitary conditions	Chair: Sascha Gabizon, Diana Iskrevá
15.45 - 16.45	Symposium		HEAL session
		RPG II: Accidents, trauma, obesity – the built environment	Chair: Hanns Moshhammer
16.45 - 17.00	Break		
17.00 - 18.00	Session		HEAL session
		RPG III: Respiratory health – indoor- and outdoor air quality	Chair: Peter Helms (TBC), Christian Farrar-Hockley
17.00 - 18.00	Session		HEAL session
		RPG IV: Intoxication and chronic disease – chemical and physical hazards	Chair: Genon Jensen, Olga Speranksa (TBC)
18.00 - 18.15	Break		
18.15 - 19.00	Plenary		HEAL session
		Reporting back from the parallel sessions, input to the NGO declaration	

15.00 - 19.00	Poster Session	All Topics	Chairs: Peter Wallner / Austria (not confirmed), Hans-Peter Hutter / Austria (not confirmed) , Peter van den Hazel / Netherlands, Ondine von Ehrenstein / USA
		Air pollution and impact on human health - Albania	Elida Rahmani / Albania
		Analyses of factors responsible for children organs of urine systems disease in Tajikistan	Muzafar Isobaev / Tajikistan
		Analysis of malignant neoplasm morbidity in children	Elena Ten / Kyrgyz Republic
		Antibodies to Haemophilus influenzae type b capsular polysaccharides in immunized and non-immunized Vietnamese infants	Thac Dinh / Vietnam
		Assessing pediatric asthma occurrence: a comparison between an electronic database and screening questionnaires	Bechtold Petra / Italy
		Atopic status of pregnant women in relation to the type of environment in Slovakia	Henrieta Patayova / Slovakia
		Bacteriological and chemical indicators of water quality to children environmental health in Tajikistan	Irina Korsakova / Tajikistan
		Bacteriophage may become useful preparation for pediatric medicine	Grigol Abramia / Georgia
		Biological monitoring of exposure to pesticides of members of families working in agriculture and their children -preliminary results	Joanna Jurewicz / Poland
		Blood lead levels and onset of puberty in Russian boys, Chapaevsk, Samara region	Sergeyev Oleg /Russia
		Blood lead levels in anaemic children living in Siauliai district of Lithuania	Izolda Kriviene / Lithuania
		Petrochemicals Environmental Polluted & Children Health Impacts in District, Fier. (Albania)	Luka Hajdar / Albania
		Change in legislation and the impact on toluene sniffing in Chilean children	Enrique Paris / Chile
		Childless-Workless-Worthless- futures and environments of our children?	Jürgen Bilger / Germany (ISDE)
		Children's environment and health in Ecuador: Four examples	Raul Harari / Ecuador
		Climate change impact on children's health in Armenia	Amalia Hambartsumyan / Armenia
		Contributing to understanding our future: Research in children	Loredana Ghinea / Belgium
		Current status of BFHI in Bangladesh and Future challenges	A.M.M.Samsad / Bangladesh
		Cytochrome P450A1 polymorphisms along with PM10 exposure contribute to the risk of birth weight reduction in 1st trimester of pregnancy	Eun-Hee Ha / South Korea
		Detection and management of lead poisoning in children	Aurelia Cordeanu / Romania
		Effects of urban and rural environment on children's health in Hungary - adapting of a questionnaire on "draw and write" technique	Annamaria Uzzoli / Hungary
		Epidemiology and determinants of bicycle injuries in adolescents	Gabriella Páll / Hungary
		Exposure to environmental hazards and the risk of male infertility - multicenter national study in Poland	Joanna Jurewicz / Poland
		Exposure to Environmental Tobacco Smoke, GSTM1/GSTT1 and Oxidative Stress	Yun-Chul Hong / South Korea
		Five nations assessments on HIV and Infant Feeding (IF)	A.M.M.Samsad / Bangladesh
		Health of street children in Chandigarh	Shyam Lamsal / India
		Highlights on some environmental health problems of children in Poland	Maja Muszyńska-Gracia / Poland
		How can knowledge of fetal metabolism help to interpretate genome damage caused by transplacentally transported xenobiotics	Aleksandra Fucic / Croatia

		How to protect children from environmental tobacco smoke exposure?	Kinga Polańska / Poland
		Improvement of the Crimean children health through iodine and quality drinking water provision	Andrey Artov / Ukraine
		Indoor air quality assessment in relation to health impacts on children - a new perspective from Central India	Nitink Jaiswal / India
		Influence of indoor air quality on health of children in all-day schools in Austria – a project design	Philipp Hohenblum / Austria
		Parental SES (Socioeconomic Status) factors and pregnancy outcomes in prospective cohort study using a path analysis	You-Kyoung Song / South Korea
		Pesticides exposure and children's health: a qualitative ecosystem health approach	Douglas Barraza / Costa Rica
		Prevention of unintentional injuries among pre-school and school children	Rodica Nicolescu / Romania
		Protecting children from exposure to lead in children's jewellery	Sarah Sheffield / Canada
		Reconsideration of early childhood vaccination	Fuad Amsyari / Indonesia
		Regional differences in development of allergic diseases in 5 years old children with respect to type of major anthropogenic activities	Jana Babjakova / Slovakia
		Social inequalities and paediatric cancer in region of Murcia	Juan Antonio Ortega García / Spain
		Students musculoskeletal disorders	Constanta Huidumac-Petrescu / Romania
		Assessment of physical activity and obesity in children according to Regional Priority Goal 2 of CEHAPE at national and regional level based on environmental health indicator system	Anna Paldy / Hungary
		The attitudes to the own health and healthy lifestyle among urban and rural school-children	E. Griniene / Lithuania
		The influence of socio-economic factors on health and health-related behavior of adolescents in Georgia	Karaman Pagava / Georgia
		VOCs(Volatile Organic Compounds) personal exposure and pregnancy outcome in a cohort study of Mothers and Children's Health and Environment (MOCHE)	Byung-Mi Kim / South Korea
		Environmental exposure depending on socioeconomic status in Korean children: two years' results of Children's Health and Environmental Research (CHEER)	Ha Mina / South Korea
		Indoor air pollution and asthma	Anca Maria Moldoveanu / Romania
		The puzzle of pesticides and childhood cancer	Michael Nasterlack /Germany
		New Knowledge about the impact of environmental exposure to PAHs in newborns	Radim Sram / Czech Republic
19.30	Reception by the Mayor of Vienna		

Tuesday	12th of June	Medical University of Vienna (Medizinische Universität), 1090 Wien	Schwarzspanierstras se 17, lecture rooms
08.30 - 09.30	Symposium	Air pollution in mega cities	Chairs: Ondine von Ehrenstein /USA; Irma Makilanao / Philippines
	08.30-09.00	Traffic pressure on Dhaka City and its effects on Children's Health	Mohammad Al-Amin / Bangladesh
	09.00-09.15	The relationship between asthma and outdoor air pollution among primary school learners in Durban, South Africa	Joy Kistnasamy / South Africa
	09.00-09.15	Prenatal and perinatal determinants of respiratory symptoms in early childhood. Modulation of effects by diet in pregnancy	Wieslaw Jedrychowski / Poland
	09.15-09.30	<u>Discussion</u>	<u>Chairs: Ondine von Ehrenstein /USA; Irma Makilanao / Philippines</u>
	Symposium	How to increase knowledge	Chair: Stephan Boese-O'Reilly / Germany
	08.30-09.00	Training health care providers (WHO training modules)	Marie-Noel Brune / Switzerland (WHO)
	09.00-09.15	Children's health and the environment: Educating for more knowledge /CHEST)	Peter van den Hazel / Netherlands
	09.00-09.15	ISDE - training possibilities	Roberto Romizzi / Italy (ISDE)
	09.15-09.30	Actions taken in South America by INCHEC and ISDE: education, CEH Units, CEH's profiles, indicators and multisectorial participation in the last three years	Lilian Corra / Argentina (ISDE)
	09.30-09.45	Basic strategies to protect children from environmental hazards	Tee Guidotti / USA
08.30 - 09.30	Workgroup		
09.30 - 09.45	Break		
09.45 - 11.45	Symposium	Regional Threats to CEH - round table	Chair: Jenny Pronczuk / Switzerland (WHO), NN
	09.45-10.00		Irma Makalanao / Philippines (PINES)
	10.00-10.15		Lisbeth Carrillo / Mexico
	10.15-10.30		Manabu Hasegawa / Japan
	10.30-10.45		Wieslaw Jedrychowski / Poland
	10.45-11.00		Hamed Bakir / Jordan (WHO)
	11.00-11.15		Alexander von Hildebrand / India (WHO)
	11.15-11.45	<u>Discussion</u>	<u>Chair: Jenny Pronczuk / Switzerland (WHO), NN</u>

09.45 - 11.45	Symposium	Monitoring children's exposure	Chairs: Nida Besbelli / Germany (WHO), Gerd Oberfeld / Austria
	09.45-10.00	The German health interview and examination survey for children and adolescents (KiGGS) – First results	Ute Wolf / Germany (RKI)
	10.00-10.15	The German Environmental Survey- monitoring children's exposure	Marika Kolossa-Gehring / Germany (UBA-Berlin)
	10.15-10.30	Update on the activities related to action 3 to the health and environment strategy - pilot project	Reinhard Joas / Germany
	10.30-10.45	Prenatal exposure to ambient pollutants: The INMA cohort in Valencia, Spain	Ferran Ballester / Spain
	10.45-11.00	Growing in France: The Elfe birth cohort	Georges Salines / France
	11.00-11.15	A national survey on environmental factors related to diet, physical activity and overweight in secondary schools in the Netherlands	Lideke Middelbeek / Netherlands
	11.15-11.30	Heavy Metals	Nida Besbelli / Germany (WHO EURO)
	11.30-11.45	New generis	Maria Botsivalli / Greece
	11.30-11.45	Environmental challenges and children's health in Armenia	Anahit Aleksandryan / Armenia
	11.45-12.00	<u>Discussion</u>	<u>Chairs: Nida Besbelli / Germany (WHO), Gerd Oberfeld / Austria</u>
09.45 - 11.45	Workshop	Paediatric health centres - part 1	Chair: Martha Berger / USA (EPA) ; Jenny Pronczuk / Switzerland (WHO)
	09.45-10.00	National center for environmental health/agency for toxic substances and disease registry	NN
	10.00-10.15	Why pediatric centres?	Enrique Cifuentes / Mexico
	10.15-10.30	Toward establishing a centre in Chile	Enrique Paris / Chile
	10.30-10.45	Origins and developmental concepts of pediatric environmental health speciality units in the US	Robert Amler / USA
	10.45-11.00	Pediatric centres and the needs of developing countries	Irma Makilaneo / Philippines
	11.00-11.15	Nursing models for pediatric environmental health	Barbara Sattler / USA
	11.15-11.30	PEHSU case studies	Catherine Karr / USA
	11.30-11.45	The elements all children's environmental health centres share	Jerome Paulson / USA
11.45 - 12.00	Break		
12.00-13.15	Symposium	Setting approach	Chairs: Zbigniew Rudkowski / Poland; Alexander von Hildebrand / India (WHO) (not confirmed)
	12.00-12.15	Setting guidelines to protect children's health: The Interagency Committee for Environmental Health approach to mercury spill clean up in a school	Irma Makalinao / Philippines
	12.15-12.30	Children's Clinic Glanzing, the first PVC free Neonatal Intensive Care Unit (NICU)	Andreas Lischka / Austria
	12.30-12.45	Ecological sanitation in rural Armenia	Elena Manvelyan / Armenia
	12.45-13.00	Preventing infectious diseases in rural areas by implementing an integrated approach to vector management	Alexander von Hildebrand / India (WHO)
	13.00-13.15	Skin cancer prevention: children's health education on protection behaviour from sun exposure and the assessment of its efficiency	Ausra Petrauskiene / Lithuania
	13.15-13.30	Integral health and children's education for sustainable development: Look from Ukraine	Low Gerbilsky / Ukraine

12.00-13.00	Symposium	Pesticides	Chairs: Lilian Corra / Argentina (ISDE), Helsing Hurrinag / Mauritius
	12.00-12.15	Pesticides and children	Nida Besbelli / Germany (WHO)
	12.15-12.30	Combined health effects of prenatal pesticide exposure and malnutrition in developing countries	Raul Harari / Ecuador
	12.30-12.45	Policy implications of DDT and malaria in Africa	Paul Saoko / Kenya
	12.45-13.00	Household pesticide use and childhood leukemia and lymphoma: the ESCALE study (SFCE*)	J�r�mie Rudant / France
	13.00-13.15	Retrospective analysis of an outbreak of non-successful pregnancies in a community nearby a melon plantation	Leonel C�rdoba / Costa Rica
	13.15-13.30	Exposure of pesticides and liver enzyme among women and children in an agriculture community in Malaysia	Zailina Hashim / Malaysia
	13.30-13.45	The impact of pesticides on children's health	Stella Michaelidou-Canna / Cyprus
11.45-12.45	Workshop	Paediatric health centres - part 2	Chair Martha Berger / USA (EPA) ; Jenny Pronczuk / Switzerland (WHO)
	11.45-12.00	Setting up a global network of centres	Juan Antonio Ortega-Garcia / Spain
	12.00-12.45	<u>Discussion</u>	<u>Chair Martha Berger / USA (EPA) ; Jenny Pronczuk / Switzerland (WHO)</u>
13.00 - 14.00	Lunch		
14.00 - 15.00	Plenary	New emerging diseases	Chairs: Jenny Pronczuk / Switzerland (WHO); Dorota Jarosinska / Denmark
	14.00-14.30	The Need For a Life-Stage Approach to Assess Risks from Chemical Exposures in Children	Jenny Pronczuk / Switzerland (WHO)
	14.30-15.00	Climate change – how dangerous is it for children's health	Bettina Menne / Italy (WHO)
15.00 - 15.15	Break		
15.15 - 16.00	Plenary	Children's health and socio-economic factors	Chair: Genon Jensen / Belgium (HEAL), Sascha Gabizon / Germany (WECF)
	15.15-15.35	Monitoring of socioeconomic disparities in environmental exposures and children's health: Experiences from the Bavarian Health Monitoring Units	Gabriele Bolte / Germany
	15.35-15.55	Making the case for Environmental Justice in Central and Eastern Europe	Tamara Steger / Hungary
15.55-16.10	Break		
16.10-17.30	Symposium	Children's environmental health policies	Chair: Genon Jensen/ Belgium (HEAL), Sascha Gabizon/ Germany (WECF)
	16.10-16.30	Environment and children's health: Research activities funded by the European Commission's Research Directorate-General	Tuomo Karjalainen / Belgium
	16.30-16.50	Towards a comparative assessment of policy actions on children's health and the environment: a case study within WHO-coordinated ENHIS project	Eva Kunseler / Finland
	16.50-17.10	On development of the State Children's Environmental Health Action Plan of the Kyrgyz Republic	Ainash Sharshenova / Kyrgyz Republic
	17.10-17.30	An ecological approach to research, education and policy for child health - the Learning and Developmental Disabilities Initiative (LDDI)	Sharyle Patton / USA (not confirmed)
17.30-17.45	Break		

17.45-19.00	Plenary	Conclusions and further activities	Chairs: Bakir Hamid / Jordan (WHO) (not confirmed); Stephan Boese-O'Reilly / Austria
	17.45-18.00	General introduction - activities from INCHEs	Peter van den Hazel / Netherlands
	18.00-18.15	Reducing environmental risks for children - European perspective	Michal Krzyzanowski / Germany (WHO Euro)
	18.15-18.30	Reducing environmental risks for children - global perspective	Jenny Pronczuk / Switzerland (WHO)
	18.30-18.45	<u>Closing remarks</u>	Hanns Moshammer / Austria; Stephan Boese-O'Reilly / Austria
	Social event	Reception by the Ministry of Environment (Lebensministerium)	

Postcon- ference Wednesday	13th of June	Institute of Hygiene and Environmental Medicine (Hygiene Institut), 1095 Wien	Kinderspitalgasse 15, lecture room 2nd floor
09.30 - 11-00	Workgroup	INCHEs board meeting	Peter van den Hazel, Netherlands

Presentations

Plenaries & Symposia

Workgroups & Workshops

Environmental threats to children' health: a global problem

1) *Maria Neira, Dr.*

1) *Director Public Health and Environment
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Today's children are exposed to a wide range of environmental threats, whose consequences may appear early in life, throughout their youth and even later, in adulthood. Children breathing polluted air may suffer pneumonia or asthma crises and end up with chronic respiratory disease. Repetitive episodes of diarrhoeal disease due to unsafe water and food may cause chronic malnutrition and reduce the cognitive functions and learning abilities of schoolchildren. New environmental pollutants, whose effects are not fully known, may be linked to endocrine disruption, immune and developmental problems.

The environments of children are changing rapidly, as a result of factors such as increased chemical production, transportation and use, deforestation and urbanization patterns. Pollutants in air, water and food, lack of hygiene, unsafe behaviours and dangerous built environments can cause, trigger or worsen paediatric diseases and developmental problems. Health problems linked to environmental hazards are multiplying and becoming more visible due to rapid population growth, crowding, industrialization and pollution from many anthropogenic and natural sources, and as a result of climate/global change.

More knowledge is nowadays available about existing and new, emerging physical, chemical and biological environmental risk factors. Concern is growing about the special susceptibility of children - during "critical windows of vulnerability"- and as a result of their unique behaviours and dynamic physiology and also about the environmental determinants of the fetal origins of adult disease. Recent chemical "body burden" studies showed an average of 200 contaminants in the umbilical cord of newborns, and although their sole presence does not predict disease, it is a cause of preoccupation. However, not all health professionals are aware about the magnitude of the impact of environmental risk factors on children's health and development.

Recent WHO estimates on the global burden of disease show that 24% of the global disease burden (healthy life years lost) and 23 % of all deaths may be related to environmental causes. In children, environmental influences can account for over 1/3 of the disease burden and 36% of deaths in the 0-14 years old. In developing areas, the impact of adverse environments is higher and children may lose 8-times more healthy life years per capita than children in developed countries. In very poor regions of the world, the disparity is greater, for example the number of healthy life years lost due to lower respiratory infection is 800 times greater per capita. Mental retardation caused by lead in gasoline is 30 times higher in areas where it is used, if compared with areas where it was banned (Preventing Disease Through Healthy Environments - Towards an estimate of the global burden of disease; WHO, Geneva, 2006).

The recognition and assessment of the environmental burden of paediatric disease should be strengthened, both in industrialized and developing countries. This will enable all responsible sectors to recognize the main problems and identify their specific roles in improving children's health through better environments. In response to the many challenges identified, the WHO department of Public Health and Environment (PHE) promotes a number of activities on Children's Health and Environment, including awareness-raising, training activities, use of indicators, collaborative research and - overall- promoting successful prevention and education 'models' to provide healthier settings for children, their families and communities.

Designing and building healthy places for children

1) *Howard Frumkin, M.D., Dr. P.H.*

1) *Director, National Center for Environmental Health / Agency for Toxic Substances and Disease Registry
Centers for Disease Control and Prevention
E-mail: hfrumkin@cdc.gov*

In environmental and occupational health, research and practice over recent decades have focused on the recognition and control of hazardous exposures such as toxic chemicals. Industrial hygienists measure these exposures, toxicologists and epidemiologists study their health effects, risk assessors quantify their impact, and regulators and engineers work toward solutions. However, recent years have witnessed a shift in the environmental health paradigm. In a parallel world, architects, planners and builders are remodelling urban streetscapes, developing large scale communities in the suburbs and revitalizing brown fields. While often viewed as distinct occupations, these two fields of environmental/occupational health and community design regularly, and with more frequency, intersect. Commonly defined as the "Built Environment," the man-made structures surrounding each of us affect our health and well-being on a multitude of levels - and they affect our children too. The homes, schools, healthcare facilities, parks, and other places where children live, play, and study need to be considered as determinants of children's good health. This presentation will introduce the concept of the Healthy Community, review evidence of the impact of community design on health and well-being (e.g. physical activity levels, respiratory health related to air quality, injury risk, and mental health), describe ongoing efforts linking public health with other sectors to achieve Healthy Communities, and propose steps toward further progress.

Nanoparticles – Review of fate and toxicology

1) C. Vyvyan Howard, Dr.

1) University of Ulster

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We have always been exposed to nano-particles, mainly consisting of minute crystals of soluble salts windblown from waves in the sea. However, there were relatively few other particles, with the exception of viruses and some other biologically generated species, of less than 100 nm in the air throughout our prehistory. That changed when man harnessed fire about 100,000 years ago. Our defence mechanisms evolved principally to cope with the biological threat posed by viruses

There is evidence that nano-particles can gain entry to the body by a number of routes, including inhalation, ingestion and across the skin, and can then travel around the body into various organs, including across the blood-brain barrier (Gumbleton, 2001). These properties are being positively harnessed by the pharmaceutical industry to improve the efficiency of drug delivery, and there is now growing recognition that the same properties could apply to 'uninvited' nano-particles resulting from pollution or manufactured products.

It has been shown that insoluble nano-particles can be toxic and therefore potentially hazardous (Oberdorster, 2000). Nano-particles have a potential for toxicity that appears to be related primarily to their small size rather than to the type of material from which they are made, although there is still much research to be done before this question is fully understood. The upper size limit at which the toxicity associated with nano-particles ceases is not fully known but is thought to lie between 65 and 200 nm. One area of concern that is, as yet, under researched is the ability of nanoparticles to cause protein misfolding (e.g. Bilsten et al, 1997)

There is epidemiological evidence showing that exposure to particulate aerosols leads to long term health effects, primarily of the cardio-pulmonary system (e.g. Wichmann and Peters, 2000). There is also evidence that short term effects from poor air quality is due to particle overloading.

Enough evidence is already extant to demonstrate that nano-particles are likely to pose a health hazard and that human exposure in general, and in particular in the workplace, should be minimised on a precautionary basis. A number of expert working groups have met under the auspices of the EU and it appears that there will be new legislation considered in the near future (http://europa.eu.int/comm/health/ph_risk/events_risk_en.htm). The insurance industry is also taking a keen interest. While it is easy to appreciate how nanotechnology can be harnessed to positive pharmaceutical uses, there is an urgent need to curb the generation of unnecessary nano-particles, particularly of the insoluble variety. As far as can be determined, the risk assessments to address the misgivings outlined above are not yet in place. It seems important that the long term environmental fate of such products be determined before mass production proceeds.

Bilsten et al (1997). FEBS Lett 402: 67-72.

Gumbleton M (2001) Advanced Drug Delivery Reviews 49 : 281–300

Oberdorster G. (2000). Phil. Trans. R. Soc. Lond. 358: 2719-2740.

Wichmann, H.E., and Peters, A. (2000). Phil. Trans. Roy. Soc. Lond. 358: 2751-2769.

Fine particles, a major threat to children

1) *Joachim Heinrich*

1), 2) *Remy Slama*

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2) *INSERM, National Institute of Health and Medical Research, U569, Le Kremlin-Bicêtre, France*

Background: There is a growing body of evidence for serious health consequences of exposure to ambient air pollution. The general question of who is susceptible is one of the most important gaps in current knowledge regarding particulate matter (PM)-related health effects. Who is susceptible is depending on the specific health endpoint being evaluated and the level and length of exposure. Here, we restrict the review on the impact of fine particle exposure on children's health to the following outcomes: infant death, lung function, respiratory symptoms, and reproductive outcomes.

Methods: This is a strategic review of children's susceptibility to ambient fine particles and characteristics of infant and children which underlie their increased susceptibility to PM.

Results: Ambient fine PM is associated with intra-uterine growth retardation, infant mortality; it is associated with impaired lung function and increased respiratory symptoms, particularly in asthmatics. Concerning infant mortality, exposure to PM is strongly and consistently associated with postneonatal respiratory mortality and less consistently with sudden infant death syndrome. Although most of the studies reported adverse effects for this health outcome, the evidence is weaker than for infant death. Exposure to fine PM has been associated with impaired lung function and lung function growth. Most of the studies reported increased prevalence of symptom with increased exposure to fine PM.

Conclusion: Fine PM is a major threat to children, because of their higher exposure to PM compared to adults, the immature state of the lung in childhood and also of the immune function at birth. The first months of life might be a period of particular sensitivity. Although the mechanisms of air pollution effects have not yet been completely understood, pregnant women, infants and children need specific protection against exposure to fine particles.

Asthma and environment – risk or protection?

1) *Ondine S. von Ehrenstein, PhD, MPH, MSc*

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Environmental factors operating in utero and in infancy may determine the risk for developing asthma in childhood. Asthma, as an inflammatory disorder of the airways, is generally associated with atopy. Prevalence rates of atopic diseases in most industrialized countries are high and increasing trends have been observed over the last decades. More recently, rises in asthma prevalence were reported from countries in transition, such as India and Brazil, as well as developing countries, such as Africa. This underlines the meaning of environmental factors for the risk of asthma which is a threat for children's health globally. A number of environmental factors as well as potential gene-environment relations have been suggested. A protective effect of being raised in a farm environment, including contact to farm animals, for hay fever and atopic sensitization was found in countries such as Germany and Switzerland. Interestingly, exposure during the prenatal period seems to be critical. Other factors suggesting to increase the risk for asthma and inflammation of the airway epithelium include infections, environmental tobacco smoke and pollutants. Thus, certain factors during fetal and early infancy may shift the immunological development towards the Th1 or the Th2 pathway. Evidence is further increasing that important interactions with the environment operate through epigenetic mechanisms that influence the expression of genes associated with asthma and atopy.

This paper will discuss recent research developments regarding the role of environmental and genetic factors for the risk of developing asthma. Future research directions will be highlighted concerning biomarkers of different types of asthma and novel therapeutic targets that could influence the natural history of childhood asthma globally.

Changing trends of asthma prevalence and seasonal variations in children

1) *H. Paramesh*

1) *Director Pediatric Pulmonologist
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Object: The object of our study is to find out the current prevalence of asthma and the spectrum of asthma in relation to season.

Introduction: Asthma is a chronic airway disease of lungs and is showing a steady increase in prevalence for the past two decades, however recent studies surprisingly show a steady decrease in prevalence. Our own hospital based study on asthma in Bangalore, India shows a steady change in the prevalence of asthma from 1979, 1984, 1989, 1994 and 1999 respectively. This has been correlated with change in the demography of the city. Most of these attacks were in winter and monsoon seasons, and only 2.8% was in summer.

Material Method: In this prospective study 6677 children under 18 years of age were evaluated clinically in the general pediatric outpatient by pediatric pulmonologist from Jan 1st to Dec 31st 2004. The diagnosis of asthma was considered when there is 15 per cent increase in peak expiratory flow value after salbutamol inhalation by nebulisation in children above 5 years of age and in children under 5 years, who had 3 episodes of wheeze, persistent cough over 2 weeks, showing good response to bronchodilators and having atopic features with family history.

Result: 1762 out of 6677 children 26.7% had asthma, 2.8% less in prevalence in 5 year period. However the Persistent asthma increased from 20% to 36.6% and the asthma episodes increased from 2.8% to 19.8% in summer months in 10 years from 1994 to 2004.

Reasons: The decrease in the prevalence of asthma is due to saturation of genetically predisposed population of our city. Increase in persistent asthma is a major social and economic burden is due to continued air pollution, significant increase in asthma episodes in summer can be explained due to possible increase in ozone concentration due to increased automobile emissions with sunshine.

Conclusion: The prevalence of asthma in children decreased by 2.8% in 5 years after a steady increase in 20 years. However the persistent asthma is increased by 16.6% in 10 years and asthma episodes increased by 17% in summer months in 10 years. Automobile emission and possible increase in ozone levels in summer months seems to be the possible cause.

Respiratory health of Austrian school children

1) *Hanns Moshhammer*

1) *Hans-Peter Hutter*

2) *Peter Wallner*

1) *Michael Kundi*

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In a small industrial town concerns were raised about the local air quality and its impact on the health of the children living there. To address this issue, an examination of the respiratory health of 177 school children in first and second grade was carried out. While the variation in outdoor air pollution was too small between the three school districts to be meaningfully investigated, the environmental and housing conditions derived from a questionnaire provided valuable data. Questionnaires were distributed to the parents of the children by three participating elementary schools. For 186 of the 207 children in the first and second grade parents gave their consent to participate in the study and filled detailed questionnaires on household, living conditions, and health status of the children. 177 children performed spirometry. Air quality data (NO₂, O₃, SO₂, PM₁₀) from three monitoring stations (2 stationary and 1 mobile) were provided by the local authorities.

The reported health status (doctor diagnosed asthma 2.2%, acute asthmatic symptoms in the last 3 months, 3.8%, various single respiratory symptoms mirrored in the lung function performance test. Both symptoms frequencies and lung function parameters were on the average comparable with findings from other similar Austrian surveys like those in the framework of the ISAAC study. PM₁₀ concentrations were higher at the monitoring station in the centre of the town than at the ones outside the town. In the town the limit value of 50 µg/m³ was exceeded on 22 days with the highest daily values exceeding 100 µg/m³ during January and February 2005.

Mould at home, living in a street with heavy traffic (especially lorries), and living in the urban centre of the town lead to significant reductions in some lung function parameters, while a better education of the parents and a larger family size were associated with a better lung function.

Asthma and the hygiene hypothesis

1) *James M. Seltzer, M.D.*

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Objectives:

1. Describe the hygiene hypothesis
2. Discuss how the hygiene hypothesis relates to atopy and asthma
3. Discuss the scientific basis for the hygiene hypothesis, both supportive and contradicting evidence
4. Relate the hygiene hypothesis to current pediatric care practices

Brief summary of content:

The hygiene hypothesis proposes that early exposure to heterologous structural components and products of microorganisms, e.g., bacteria, fungi and common indoor aeroallergens) decreases the risk of developing asthma and other atopic diseases. Relevant exposures may begin in the gestational period and continue into early childhood, even mid-childhood. Historically, children were exposed to numerous biological agents and components - nearby farm animals, childhood viral, bacterial, and, in some regions, parasitic infections, and insects. However, a continuing trend away from agrarian living, improvements in and more widespread vaccination, smaller family size, and other factors have reduced the frequency and degree of exposure children to biological agents. I will discuss whether this a valid explanation, at least in part, for, the increased prevalence and incidence of atopic sensitization, asthma, and other allergic diseases?

Roundtable session at the International Conference of Children's Health and the Environment INCHEs

Vienna 10-12th June 2007

"Children's Environmental Health Indicators (CEHI) – Shaping Priorities for Action"

Request for length of session: 3.5 hours

Background:

Following the launch of the Global Initiative on Children's Environmental Health Indicators (CEHI) at the World Summit on Sustainable Development (WSSD) in 2002 and spearheaded by the Office of Children's Health Protection (USEPA), WHO has been coordinating the development and implementation of this initiative. CEHI has welcomed contributions from all over the world to help improve the assessment of children's health, monitor the effects of interventions and to report on the state of children's environmental health.

Aim:

The aim of the CEHI roundtable is to share experience on the development and reporting on children's environmental health indicators, learn from partners' lessons and agree on future directions towards a harmonized approach to information support of relevant interventions.

Objectives:

Specific objectives of the roundtable include:

- To report on the status and progress on CEHI development and reporting in Europe, Africa, the -
- To review and take stock of different implementation mechanisms and experience across regions;
- To recommend future directions on CEHI and exchange mechanism among relevant regional and national initiatives

Agenda for CEHI Roundtable "Shaping Priorities for Action"

Chair: Dr H. Frumkin (CDC)

1. Opening remarks: M. Berger (USEPA)
2. "Making the Case for Action – The Global Initiative on Children's Environmental Health Indicators" – review on progress since WSSD - Ms F. Gore (WHO HQ):
 - The US and CEH indicators - T. Woodruff (USEPA) TBC
 - The North American Report - Ms S. Ecclestone (Health Canada) TBC
 - CEHI at the US/Mexico Border - Ms S. Edwards (PAHO)
3. CEHAPE indicator-based Report "Children's Health and the Environment in Europe: Baseline Assessment" and information support to policy actions - Dr D. Dalbokova (WHO EURO):
 - CEH policy indicators - A case study of UV radiation (E. Kunseler, Finland)
 - Reporting on environmental chemicals and children's health - A case study of POPs in Human breastmilk (N. Besbelli)
4. CEH indicator development for Argentina under the CEH Profile (Perfil SANA) in collaboration with Argentinean government, the Society of Paediatrics of Argentina, academia and NGOs - Dr L. Corra (ISDDE/Latin America AAMA - Argentina).
5. CEHI in the Eastern Mediterranean Region - H. Bakir (WHO EMRO):
 - Oman - A case study
 - Tunisia - A case study
6. "Turning Indicators into Action: Beyond Indicators - Interventions for Tunisia" - Dr S. Bonjour (WHO HQ)
 - Discussion

List of participants

1. Bakir Hamed (WHO EMRO)
2. Berger Martha (USEPA)
3. Besbelli Nida (WHO EURO)
4. Bonjour Sophie (WHO HQ)
5. Brune Noel (WHO HQ)
6. Corra Lilian (ISDDE/AAMA - Argentina)
7. Dalbokova Dafina (WHO EURO)
8. Ecclestone Susan (Health Canada)
9. Edwards Sally (PAHO)
10. Frumkin Howard (CDC)
11. Goodman Donna (UNICEF) TBC
12. Gore Fiona (WHO HQ)
13. Kunseler Eva (KTL - Finland)
14. Monti Veroncia (AAMA - Argentina)
15. Pronczuk Jenny (WHO HQ)
16. Senkoro Hawa (WHO AFRO)
17. UNEP - TBC
18. Woodruff T (USEPA) TBC

"Children's Environmental Health Indicators (CEHI) Roundtable session – List of speakers

Al-Wahaibi Salim & Al-Harhi Tawfiq Ibrahim
MoH Sultanate Oman
Oman: A case study

Bakir Hamed
WHO EMRO

CEHI in the Eastern Mediterranean Region

Within the framework of the global initiative on children's environmental health indicators (CEHI), two pilot applications in Tunisia and Oman were undertaken in the Eastern Mediterranean Region (EMRO). The pilot applications aimed at: i) Testing and refining assessment and reporting methodologies; ii) Building national and regional capacities in monitoring environmental risks factors affecting children; iii) Creating a movement to improve management of environmental risk factors affecting children. The Multiple Exposures Multiple Effects model (MEME) provided the conceptual framework and phased assessment and reporting approach were developed.

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Opening remarks

Nida Besbelli Ph D
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Reporting on environmental chemicals and children's health - A case study of POPs in Human breastmilk (Europe)

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"Turning Indicators into Action: Beyond Indicators - Interventions for Tunisia"

Following the publication of the final report on children's environmental health indicators (CEHI) in Tunisia, a further step is being taken, using the results and findings from this preliminary assessment. This work aims to provide an analysis of the environmental health impacts, to quantify how much disease could be prevented and to identify potential intervention areas.

Corra Lilian
ISDE President
INCHES International Steering Committee Member
AAMMA - Argentina

CEH indicator development for Argentina under the CEH Profile

The Asociación Argentina de Médicos por el Medio Ambiente (AAMMA) and the Canadian Institute of Child Health (CICH), in cooperation with the Ministry of Health and Environment of Argentina, Health Canada, the University of Ottawa and the Argentine Society of Pediatrics (SAP) are working together to complete a profile that collects and compiles information on the state of Children's Environmental Health in Argentina. The project has been developed with support from the Canadian government through the Canadian International Development Agency (CIDA-ACDI). The goal of the project is to assist in the protection of Argentine children's health by decreasing environmental hazards, resulting in healthier children and healthier environments.

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CEHAPE indicator-based Report "Children's Health and the Environment in Europe: Baseline Assessment" and information support to policy actions

WHO Regional Office for Europe develops children's environment and health indicators in collaboration with the European Commission. These indicators are key tools for policy-makers; a comprehensive system of information on health and environment (EHIS).

Objective is to help policy-makers in the countries especially to monitor the environment and health situation and trends in the countries and track and evaluate relevant policy effectiveness. There are currently twenty-six indicators in the data-base.

Results and experiences from the CEHAPE indicator-based report: 'Children's health and the environment in Europe: baseline assessment' will be presented in the CEHI roundtable including case studies on children's EH policy indicators and POPs in human breast milk.

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CEH Indicators in Canada

Overview of recent and planned activities underway in Canada related to indicators of health and the indicators, including with respect to child health.

Edwards Sally
PAHO

CEHI at the US/Mexico Border

The CEHI project on the United States - Mexico (US/M) border was initiated in early 2006. The indicators on which information was collected were selected based on the frequency with which they appeared as priority indicators in the Pan-American Health Organization (PAHO) workshops held on the US/M border, their usefulness and relevance for the border as a whole, as well as the Global Initiative, and the applicability to both sides of the border.

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"Making the Case for Action - The Global Initiative on Children's Environmental Health Indicators"

The Global Initiative on Children's Environmental Health Indicators (CEHI) was launched at the World Summit on Sustainable Development in 2002. CEHI are aimed at providing a basis for assessing environmental risks to children's health, to prioritize policy at national and global level, to monitor and evaluate the effectiveness of interventions to reduce environmental risks for children.

Regional indicator pilots and projects have identified key environmental risks to children, pointing towards areas with strong needs for effective interventions. Various methodological approaches, used to assess children's environmental health, help towards shaping harmonized information and improving data quality in different regions of the world providing a strong basis for action.

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CEH policy indicators - A case study of UV radiation(Europe)

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Tunisia: A case study

A pilot project on children's environmental health indicators, conducted by the Ministry of Public Health of Tunisia together with the WHO Regional Center for Environmental Health in the Eastern Mediterranean Region, was initiated in Tunisia in 2004. The aim of the pilot project was in the first instance to fill the gap in the collection of data which was lacking, necessary to calculate the indicators, as suggested by the Global Initiative on CEHI, to establish a profile of the state of the children's environmental health (aged 0-14 years), and finally to identify national priorities in term of environmental health. The main findings of the final report, published in 2006, show that indoor air pollution and unintentional injuries remain important issues.

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CEH Indicators in the US and the North American Report

Beginning in 2000, the US has presented a series of reports and data on children's environmental health indicators through America's Children and the Environment that provide indicators of factors important to children's environmental health. Quantitative data is presented from a variety of sources showing trends in levels of environmental contaminants in air, water, food, and soil; concentrations of contaminants measured in the bodies of mothers and children; and childhood diseases that may be influenced by environmental factors at the US national level. This data provides important, policy relevant measures for assessing progress in achieving environmental protection of children and identify areas for further interventions. This presentation will review the development and lessons learned in developing children's environmental health indicators. In addition, the contributions to the first regional report for North America developed by the Commission on Environmental Cooperation will be discussed.

The use of the internet for children's health & the environment

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Objectives:

By the end of this session participants will be able to:

- n Describe uses of the Internet
- n Evaluate WWW documents using criteria discussed in the session
- n Understand some of the limitations of the WWW
- n Use a portal, a search engine and other types of search systems to maximize effective Web searching
- n Utilize some of the more important websites related to children's health and the environment.

Summary of Content:

The Internet is a primary source of environmental health information. Some of the most reliable sources of information for the clinician, as well as the public, are only available on the Internet; e.g., the National Library of Medicine's TOXNET [<http://www.toxnet.nlm.nih.gov/>]. In addition, the Internet has become the general public's primary source for medical information, including sites related to environmental health and toxic exposures. Parents regularly access information and often bring items into their pediatrician's office. Unfortunately, the reliability of information from the Internet can be variable, depending on the source. Conversely, a wealth of relevant information is also at the pediatrician's fingertips, if directed to the right source.

Perinatal dioxin exposure in the Netherlands: the Amsterdam-Zaandam cohort, and a 15 year follow-up

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Introduction: In 1987-1991 in the Amsterdam–Zaandam region in the Netherlands a study was started to the effects of Poly-Chlorinated-Dibenzo-Dioxin (PCDD's) and Poly-Chlorinated-Dibenzo-Furans (PCDF's) exposure in the perinatal period and during lactation. Number of mother-baby pairs:60 Levels:8-93 ng/kg milkfat=prenatal exposure and 5-123ng ITEQ cumulative postnatal=lactational exposure.

In the Perinatal Period in 44 children born in 1990-1991: A significant effect on thyroid metabolism was found in relation to prenatal exposure in the baby. There was a tendency to an increased T4 level in cord blood that became significant at the time-points 7 days and 11 weeks after birth. At 11 weeks also the thyroid stimulating hormone (TSH) level was significantly increased. A significant lowering in poly nuclear white blood cells and monocytes were found in the first weeks after birth. After 11 weeks a significant lowering of blood platelets was detected in relation to the cumulative exposure through breast milk. There was a significant negative effect of postnatal=lactational exposure to dioxins and Retinol Binding Protein(RBP) levels in blood of the babies measured at 11 weeks of age, with a trend at 1 week.

At the age of 2 years and 7 months: Signs of enhanced neuromotor maturation were found.

At the age of 7-12 years: 42 children out of 60: Brain function studies revealed a significant negative effect on the latency times and amplitudes in relation to prenatal and postnatal=lactational dioxin exposure. This was demonstrated in the N200, a motoric performance area and in the P300, a cognitive area. The explanation was a defectuous myelination due to dioxins.

Spontaneous alpha frequency and alpha amplitudes were not affected. IQ-test and neurologic examination were not related to dioxin exposure. However in the behavioural field there were more social problems, and more aggressive behaviour as reported by the teachers, and an increase in anxious-depressed feelings as reported by the parents. The Cytochrome P450-activity (Cyp 1A2) was not related to either the pre- or postnatal exposure as measured with help of a caffeine loading test. Neither were the thyroid hormone levels, TSH-levels and liver enzyme levels ALT and AST at this age. Furtheron a decreased allergy, persistently decreased trombocytes, increased trombopoietin, increased CD4+ T-helper and increased CD45RA counts were found. Lung function (FEV1/FVC) was negatively related with prenatal and postnatal=lactational dioxin exposure.

At the age of 13-18 years; puberty 35 children out of 60: Pubertal development and growth are assessed. Mean current serum PCDD-F levels 1.88 pg/g lipid (0.71-4.55), current serum DL-PCBs 2.17 pg/g lipid (0.04-7.78),current serum BDE-153 2.46 pg/g and BDE 47 2.16 pg/g. An association was found between the initiation of breast development and prenatal (and current) dioxin exposure. First ejaculation is delayed in relation to current serum levels of dioxins and DL-PCBs. Current leptin levels are measured and if available will be presented. Retardation in breast development was also found in a cohort study in Belgium in relation with current dioxin exposure. Abnormalities in growth of a tissue or organ are always tricky, because it makes the tissue or organ vulnerable for later development of malignancies.

Evidence of environmental translocation from mother to foetus

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Objectives of the study were the identification of nano foreign bodies in malformed animal and human foetus.

A new diagnostic tool was set up inside the European Project Nanopathology (QOL-2002-147) in order to detect micro and nano-foreign bodies in pathological tissue and identify their chemical composition. The study employed an Environmental Scanning Electron Microscope equipped with an Energy Dispersive Spectroscopy and a sensor for the Cathodoluminescence..

The research was addressed to many pathological samples affected from diseases of unknown origin like cancer, leukaemia, lymphoma, but also to malformed babies and animals.

The present study deals with 8 cases of malformed babies from Malta affected from Neu-Lexova Syndrome, 1 case of a foetus with leukaemia and 2 malformed lambs born in a military fireground in Sardinia. The internal organs were sectioned and analyzed with the quoted technologies.

In all the samples we found submicronic particles of Antimony, Antimony –Cobalt and Zinc, especially in the liver and the kidneys. We think that very strange contamination comes from an environmental exposure of the mothers. The very tiny size of the particles allowed them to pass through the physiological barriers and their systemic dissemination inside the blood circulation. The translocation to the embryos was possible and the foreign bodies were entrapped inside the internal organs. The chemical compositions found identify them as toxic components. The environmental pollution created by the explosions of weapons in firegrounds, contaminated the grass that the sheep ate. The internalization of this metallic particles inside the blood circulation could negatively influence the embryos.

Reproductive health and the environment: WHO activities

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Concern is growing about the potential effects of environmental risk factors on human reproductive health. As the use and manufacture of chemicals grows, children are increasingly exposed to many chemicals in everyday life via air, water, food and objects. In addition they are exposed to a number of physical risk factors (radiation, heat, ..). Some of these exposures can have adverse effects on male and female fertility; and on pregnancy and parturition, as well as on the health of the embryo, fetus and newborn. They can also affect the health of the future adult, as they may have an effect on developmental programming and give way to future diseases. Both in industrialized and developing countries health care providers and decision makers require access to new information on adverse reproductive health effects that may be caused, triggered or worsened by environmental toxicants.

WHO is preparing training materials with state-of-the art information and evidence-based data on how the environment may have an impact on reproductive outcomes and on the preventive and other measures required. They will be used to train the health care sector (e.g. doctors, midwives, nurses,...) and contribute to a better reproductive health care and to the promotion of community education.

WHO is also preparing training materials based on the Environmental Health Criteria (EHC) 237 "Principles for Evaluating Health Risks in Children Associated with Exposure to Chemicals". EHC publications are monographs designed for scientists and administrators responsible for the establishment of safety standards and regulations and provide basic scientific risk evaluation of a wide range of chemicals and groups of chemicals.

CEHAPE indicator-based report “Children’s Health and the Environment in Europe: Baseline assessment” and information support to policy actions

1) *Dafina Dalbokova, PhD*

CEH policy indicators - A case study of UV radiation

2) *Eva Kunseler, MSc. Researcher*

Reporting on environmental chemicals and children’s health - A case study of POPs in Human breastmilk

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Childhood and cancer

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Cancer in childhood is a major concern in many countries. In contrast to the public interest there are comparatively few studies of the etiology of childhood cancers. There is still insufficient evidence to answer the question whether there are factors increasing the risk of childhood cancer from environmental exposure, nutrition, infection acting on the child pre- and postnatal or such factors affecting parents prior to conception.

In all developed countries incidence of cancer in the first decade is distinctly higher as in early adolescence. According to current theory cancer is the result of a multi-stage process involving two or more genetic events. The time trend of incidence suggests that in cases of childhood cancer a primary event has already occurred before birth. Hence there are several sensitive time windows that must be considered for the evaluation of possible exogenous causes: preconceptional, prenatal and postnatal stages. While the latter has received some attention, for prenatal exposure there is less information and for preconceptional exposure in particular of fathers there is almost no evidence from epidemiology and little from animal experimentation.

About two thirds of all childhood cancers are due to hematopoietic neoplasms and neurogenic tumors. The majority of solid tumors in childhood originate from embryonic tissues, while carcinoma in epithelial tissues, the most common type in adults, is rare. Also the distribution of hematopoietic neoplasms is distinctly different from adults with acute lymphocytic leukemia (ALL) being the predominant type. Considering the fact that for most genotoxic exposures latencies around 20 years have been suggested in adults, contribution of environmental factors in childhood cancers must be distinctly different. Investigation of cord blood samples revealed a substantial fraction of cells with genetic deviations. While such cells may rapidly be eliminated in adults due to deviating markers recognized by the immune system, the neonatal immune system primed for tolerance may not be capable of getting rid of all precursors. This results in an a priori increased risk for development of cancer. For manifestation secondary events are, however, necessary. These events may be triggered by environmental factors more readily than in adults e.g. due to different pathways of enzymatic activation. Furthermore, vulnerability of the child's organism to the action of promoters such as mitogens may be distinctly higher leading to an earlier manifestation of disease as compared to adults.

Despite the difficulties of the study of childhood malignancies there are some factors that have been consistently found to increase childhood cancer risk. Among these ionizing radiation (leukemia, thyroid cancer, brain tumors), power-frequency electromagnetic fields (leukemia and possibly brain tumors), pesticides (leukemia), paternal smoking (rhabdomyosarcoma, leukemia, possibly brain tumors), and hydrocarbons (leukemia) have been most often studied.

Epidemiologic evidence from time trends and comparison of different regions suggest that there are genetic factors contributing to the risk of childhood cancer, but that there is a substantial proportion that are likely due to external causes. Up to now only a small fraction of childhood cancers can be attributed to environmental factors. It is a challenge for the future to uncover the factors responsible for childhood malignancies and, if possible, to take steps to reduce the risk.

Differences in biological and health parameters associated with place of residence and with exposure to pollutants: observations from the Flemish biomonitoring

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The Flemish human biomonitoring involved, besides older adults, adolescents and neonates. Adolescents showed significant differences in sexual development and in DNA damage measured in peripheral lymphocytes using the Comet assay in function of place of residence. Thirty six month old toddlers showed significant differences in thyroid hormone status and in neuropsychological parameters in association with differences in pollutant cord blood concentrations measured at birth. Umbilical cord blood concentrations of PCB-markers, CALUX-TEQ and Pb were measured. Social behavioural patterns (IBQ, CBCL), and Milestones were determined (12, 24, 36 months). Concentration abilities (CPT), language (RTOS) and mental development (BSID-II-NI), non-verbal intelligence (SON-R2.5-7), and gender-specific behaviour (Observation of Toy Preference) were examined (36 months). Stepwise multiple regression analysis was done (co-variables, e.g. maternal IQ; socio-economic status; HOME; alcohol/drugs/smoking during pregnancy; complications at birth/pregnancy;...). The higher the prenatal Pb-concentrations the lower the non-verbal intelligence (SON: Total and Reasoning IQ). The effect on Reasoning IQ seems to be even stronger with co-exposures to Pb and PCB. Children with high prenatal PCB-concentrations are crawling and walking significantly later (Milestones). The higher the prenatal PCB-concentrations, the less masculine play behaviour and the more neutral play behaviour is found in boys (Observation of Toy Preference), but not in girls (difference lowest-highest exposed: -55% play with boys-specific toys). Our data suggest that environmental exposures to low concentrations of pollutants, far below "safe levels", such as those occurring in Flanders, do have adverse effects and that exposures early in life are of great importance. In particular our data support that neurobehavioral development of toddlers is negatively influenced by internal (cord blood) concentrations of PCBs and Pb (<10µg/dL), and suggest that some effects are sex-linked and that behavioural observations are easy to perform and sensitive tests to detect neurotoxic effects.

Exposure to arsenic and chromium on children playgrounds

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On playgrounds with chromated copper arsenate (CCA) treated wood structures children may be exposed to arsenic. The objective of this study was to quantify the amount of arsenic and chromium on the hands of children in contact with CCA-treated wood structures or sand on playgrounds. Arsenic and chromium levels on the hands of 66 children playing on eight playgrounds using CCA-treated wood were compared to levels found on the hands of 64 children playing on another eight playgrounds without CCA-treated wood. After playing, the children's hands were washed in a bag containing 150 mL of deionized water. Arsenic and chromium levels in the hand-washing water were determined by inductively coupled plasma mass spectrometry. The mean amount of water-soluble arsenic on children's hands from CCA playgrounds was 0.50 μ g (range: 0.0078-3.5 μ g). This was significantly higher ($p < 0.001$) than the mean amount of water-soluble arsenic on children's hands from non-CCA playgrounds, which was 0.095 μ g (range: 0.011-0.41 μ g). The higher values of arsenic on the hands of children playing in the CCA playgrounds are probably due to the direct contact with CCA-treated wood. The maximum amount of arsenic on children's hands from the entire group of study participants was less than 4 μ g, which is lower than the average daily intake of arsenic from water and food. The total average chromium on the hands of 63 children who played in CCA playgrounds was 1.1 \pm 1.1 μ g (median 0.69, range 0.078-5.9 μ g). Total average chromium on the hands of 64 children who played in non-CCA playgrounds was 0.65 \pm 0.59 μ g (median 0.49, range 0.061-3.4). The difference between the two groups is statistically significant ($p < 0.01$). Chromium levels were highly correlated to both Cu ($r^2 = 0.672$) and As ($r^2 = 0.736$) levels in CCA playgrounds ($p \leq 0.01$), but not non-CCA playgrounds ($r^2 = 0.252$ and 0.486 for Cu and As respectively). Principal component analysis (PCA) indicates that chromium, copper, and arsenic are more closely grouped together in CCA than non-CCA playgrounds. These results suggest that the elevated levels of chromium and arsenic on children's hands are due to direct contact with CCA-treated wood or sand. Washing hands after playing will reduce exposure because most of the arsenic on the children's hands washed off with water.

Arsenic in drinking water and its toxicological impact on human health

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Several epidemiological studies report health effects from arsenic exposure in human primarily from drinking water in developing countries. Arsenic contamination of ground water can occur by natural leaching of minerals and by human activities. In Central India, especially Chhattisgarh and southern part of Madhya Pradesh, arsenic is present in drinking water due to weathering of rocks, minerals, Industries and other related sources. In these areas the level of arsenic in drinking water is found to be more than limiting value ($>10\mu\text{g l}^{-1}$). Soil, Sediment and waters from various sources (i.e. Pond, Well, Dug-well, Tube-well etc.) are collected from contaminated site and Arsenic is determined by using HG-Atomic Absorption Spectrophotometer. In aquatic environment Arsenic usually exist in +3 and +5 oxidation state, both as inorganic and organic metallic species. This study reviews short-term health effect levels for arsenic exposure in young children due to arsenic present in drinking water. Acute health effects typically include gastrointestinal, neurological, and skin effects, and in a few cases facial edema and cardiac arrhythmia. Dermatoses are most consistently reported in both adults and children with sub chronic exposure.

Environmental exposure to platinum-group metals released by automotive catalytic converters: the case of urban youngsters of the city of Rome

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Catalytic converters for automotive traction raise some concerns for human health and the environment, due to the release of Pd, Pt and Rh - Pt-Group Metals (PGMs). Under the thermal and mechanical conditions of use, in fact, the car catalysts can leave into the environment amounts of PGMs. Since last decade, surveys regarding PGMs have been conducted in order to assess the degree of contamination and its evolution along time. Particular attention has been paid to urban children both for their specific outdoor lifestyle and for their inherent life stage of rapid growth and development - associated with remarkable increases in the utilization of certain trace elements. The present review reports the state of the art regarding PGMs surveillance in the city of Rome and gives information on the atmospheric PGMs pollution during the last ten years. Platinum-group metals were determined in urine of hundreds of schoolchildren (6-10 yrs aged), also in association with traffic density. The actual concentrations of these metals in the group was tested to be still rather low, but their overall trend, mainly for Rh and Pd, was found to be strongly associated with traffic density in the area of residence.

Environmental dispersion of PGMs should be carefully followed by decision-makers for its potential consequence due their increasing use on large scale.

Mercury in breast milk – a health hazard for infants in gold mining areas?

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Numerous studies report on the problem to infants, of mercury burden by breast milk from mothers, exposed to methyl-mercury through sea-food consumption. In contrast to this, little is known about the transfer of mercury via breast milk from mothers exposed to mercury vapour. A pilot project in Zimbabwe was performed to investigate this kind of exposure and the resulting risk for the infants. Altogether, 131 mother-infant pairs, selected randomly, were clinically, mainly neurologically examined. The assessment was based on a standardised questionnaire, including anamnestic symptoms of mercury intoxication, ways of exposure, general health and confounders. Further on, urine and hair samples from mothers and infants and additionally breast milk samples were collected and analysed for mercury.

Analysis of the 44 breast milk samples, collected in the control area, resulted in mercury concentrations at background levels, median 0.25 µg Hg/l. Mercury concentrations in the 85 breast milk samples from mothers, living in the mining area ranged from < 0.25 µg Hg/l to 24.8 µg Hg/l, median 1.1 µg Hg/l. Ten of these 85 collected breast milk samples exceeded 4 µg/L; this level is defined by US ATSDR as "high". As expected, mercury concentrations in the bio-monitors (urine and hair) were higher in the group of mercury burdened mothers and children compared to the control group. Furthermore, the results lead to the conclusion, that infants with neurological problems had a higher calculated mercury uptake via breast milk.

The results of this preliminary study indicate that breast milk, additionally to the exposure from the surrounding of a small scale gold mining area, might be a relevant source of mercury burden for infants. Continuative data from further epidemiological studies would be helpful to investigate the dimension of inorganic mercury transfer by breast milk in detail and therefore to assess the risk for breastfed infants.

Health hazard mercury for children in gold mining areas

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In many developing countries mercury is used to extract gold from ore in small scale mining areas. Mercury exposure to the exposed population is a health hazard in these areas. Children also live in these mercury contaminated surroundings. Many of these children begin to working as miners from an early age with immediate contact to mercury. "Removal of Barriers to the Introduction of Cleaner Artisanal Gold Mining and Extraction Technologies" is part of the "Global Mercury Project" of GEF, carried out by UNIDO. In three countries the University of Munich assessed the health of people living in mining communities. In Indonesia, Tanzania and Zimbabwe 230 children were clinically examined. The mercury concentration was analysed in blood, urine and hair. Compared to the control groups, the exposed children showed typical symptoms of a mercury intoxication, such as ataxia. The children working with mercury had high levels of mercury in the various bio-monitors. The exposure derives mainly from the liquid mercury used to bind gold to mercury, forming an amalgam. This amalgam is heated, releasing mercury vapour which is the serious source of mercury exposure. Although methyl mercury is not a big problem, it is the elemental, vaporized mercury that is actually the main form of exposure. The medical symptoms show a severe adverse effect on the children's nervous system, mainly on the cerebellum. Immediate action worldwide is needed to reduce this severe chemical health hazard. Child labour with hazardous substances such as mercury must be stopped.

Mercury and health: Halting the child brain drain

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The attention of the health community has been drawn to the growing health risks associated with mercury pollution. An EU assessment published in 2005 suggested that as many as one in 20 people may be affected. The following year, a paper in *The Lancet* by P Grandjean and P J Landrigan highlighted the particular dangers of foetal exposure suggesting a silent brain drain in children exposed to well-known as well as less-studied neurotoxicants. The research therefore focussed on testing the mercury levels in small samples of volunteer women in the childbearing age group. It formed part of a wider awareness raising initiative.

The research comprised the chemical analysis of hair samples at a central laboratory in Belgium. HEAL and HCWH invited member organisations to identify a national coordinator who would manage the hair sample cutting procedure to specific indications. Groups in 21 countries within Europe and outside took up the offer. The hair samples gathered were each placed in a small plastic bag provided by the project and sent to HEAL by courier. Here, they were given reference numbers so that the laboratory collected the samples anonymously. Strict ethical and confidentiality rules were followed. An informed consent was obtained from each volunteer, who also completed a detailed questionnaire.

More than 266 hair samples were received for analysis. Of these, 95% (252 samples) had detectable levels of mercury. Detectable exposure values ranged from 0.05 ug/g to 4.96 ug/g or ppm (parts per million). Spanish women volunteers had levels more than twice as high as any other group. Although all samples tested were below the WHO benchmark value of 10 ug/g, 42 samples (15%) were above the more protective and more recent US reference dose of 1 ug/g. The US National Research Council responsible for setting this reference dose believes this to be the level that should not be exceeded in women of childbearing age.

Despite the small and unrepresentative nature of the research sample, the findings are worrying. Approximately one in six of the women tested had levels of mercury in their hair that could put an unborn child at risk of brain damage. Elevated levels were found in women with more frequent fish consumption that has been confirmed in previous peer-reviewed studies. More research is needed, particularly in areas where elevated levels exist, such as coastal areas of the Mediterranean. The survey demonstrated that elevated hair mercury levels were detected in the most developed countries such as Sweden where mercury use has been virtually eliminated as well as developing countries including India and Philippines. The survey showed that the potential exposure to women is a global problem that has to be tackled with global measures.

The links between fish consumption and occupational exposure need more investigation. The integration of mercury into the EU biomonitoring programme should be prioritised and accompanied by awareness raising initiatives on how mercury exposure can be avoided, especially for vulnerable groups such as women and children.

German environmental survey IV: environmental tobacco smoke (ETS) exposure of German children

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Introduction: The German Environmental Survey (GerES) is a large scale population study which has repeatedly been carried out since the mid-1980s. Main objectives are to generate, update, evaluate and communicate these representative data. GerES IV (2003 - 2006) is the first survey focussing solely on children. It is performed in co-operation with the National Health Interview and Examination Survey for Children and Adolescents (KiGGS), which is conducted by the Robert Koch Institute, Berlin.

Methods: In GerES IV 1,790 children aged 3 to 14 years were selected at random from the representative cross-sectional sample (N = 17,641) of KiGGS. The investigation programme comprised, inter alia, the administration of questionnaires, human biomonitoring and indoor air monitoring.

Results: Approximately one quarter of the 3- to 14-year old non smoking children in Germany were exposed to ETS at their homes (as reported by their parents).

Depending on the number of smokers in the household, the geometric mean cotinine concentration in urine differed significantly: < 2 µg/L (no smoker), 2.6 µg/L (one smoker), 4.8 µg/L (more than one smoker).

GerES IV data indicate that maternal smoking may cause higher ETS exposure than paternal smoking. The relationship between parental smoking behaviour and ETS exposure was strongly confounded by social status.

Tobacco smoke contains a number of volatile organic compounds. Smoking at home was, inter alia, one of the most important predictors for benzene concentrations in indoor air.

Conclusion: ETS is an important exposure pathway for German children. Strategies for prevention of ETS exposure have to be pursued in order to improve health outcomes for children.

Acknowledgements: The financial support of the Federal Ministries for the Environment, Nature Conservation and Nuclear Safety and of Education and Research is gratefully acknowledged. Field work of GerES IV was carried out by the Robert Koch Institute, Berlin.

Children's exposure to secondhand smoke in the US: estimates from time use survey data

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Objectives:

Children's exposure to secondhand tobacco smoke is an important health problem that has serious implications for the health of the growing child. In previous research reported in the literature, the prevalence and levels of exposure to secondhand smoke have been measured by exposure self-reports and by physical measurements. This study aims to investigate other aspects of children's exposure by the use of time use survey data reported by smokers. In particular it examines relevant aspects about smokers and settings for smoking in the presence of children, so as to inform potential measures to reduce children's exposure to second-hand smoke.

Methods:

Data from United States national surveys of time use were analysed from surveys conducted by the U.S. Census Bureau during 2003 to 2005. These surveys record details of activities, including their duration, their setting and information on the people the respondent was with while the activities were being undertaken. Respondents were interviewed on a single occasion, reporting their activities for the 24-hour period from 4 a.m. on the day before the interview until 4 a.m. on the day of the interview. The current study focused on activity coded as "tobacco and drug use", assuming that it involved mainly tobacco smoking.

Results and conclusions:

The dominant setting for children's secondhand smoke exposure was the home (either that of the respondent or that of another person). Those people who reported smokings in the presence of children were mainly female, aged between 15 and 64, and came from a range of income groups. Although the nature of the surveying technique used is likely to underestimate smoking, these results are important in developing policy to counter this behaviour that is extremely harmful to children.

Smoking relapse prevention - intervention study for postpartum women in Lodz, Poland

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Introduction: The exposure to environmental tobacco smoke gives rise to an excessive risk of several diseases in infancy and childhood, including Sudden Infant Death Syndrome, upper and lower respiratory infections, asthma, middle ear disease. While it is encouraging that approximately 30-40% of pregnant women who smoke prior to pregnancy tend to quit smoking by the first prenatal visit more than half of them relapse to smoking after delivery. Interventions to maintain quitting postpartum were so far rarely performed and their effectiveness is not well documented.

Aim: The aim of the study was to evaluate the effectiveness of smoking relapse prevention intervention for postpartum women.

Methods: The study was conducted in 2004-2006 in Lodz district, Poland. We included into the study 199 postpartum women (100 - intervention group and 99 - control one) who had quit smoking in recent pregnancy and maintained smoking abstinence within two weeks after delivery (confirmed by biochemical verification). The intervention consisted of 4 visits conducted by midwives trained in anti-smoking intervention techniques. Women from control group receive standard information about negative effect of smoking and methods how to keep smoking abstinence.

Smoking status was updated 6 and 12 months after delivery.

Results: The distribution of socio-demographic characteristics of the women from intervention and control group did not show statistically significant differences. The women from the intervention group relapsed to smoking 6 months after delivery significantly less frequently than the women from control group (26% vs. 56%; OR=0,28; 95%CI 0.15-0.51). The same proportion of women who returned to smoking were observed 12 months postpartum. Those of women who had returned to smoking did this later and smoked less cigarettes per day when they had participated in the program than the women from control group.

Conclusions: Smoking relapse prevention intervention for postpartum women is an effective tool to help them to maintain smoking abstinence in postpartum period.

Nicotine effects in pregnancy and childhood

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A multicenter study found long term impairment of lung function in children whose mothers smoked during pregnancy only (<http://ajrccm.atsjournals.org/cgi/reprint/173/11/1255>).

Although no specific smoke constituent was incriminated, nicotine is emerging as a likely cause. Nicotine crosses the placenta, activates receptors (nAChRs) in lung cells and causes, in doses equivalent to those ingested by smoking mothers, what appears to be a faster aging of the lungs in the offspring of rats. The attempt to prevent such lung damage in Rhesus monkeys by choline and vitamin C supplements increased the neurotoxicity of nicotine on the brain. Irreversible effects on hippocampal structure, function, learning, and memory in animal experiments correspond to associations found in smoke-exposed children between cotinine excretion and cognitive, affective, and behavioral disorders. Blocking of nAChRs during a critical period in development may lead to permanent functional deficits not only of the lungs but also of the brain. Nicotine is also implicated in Sudden Infant Death Syndrome and Attention Deficit Hyperactivity Disorder. As a promoter, nicotine aids carcinogenesis. Despite the accumulated evidence of nicotine's harmfulness, "Nicotine Replacement Therapy" (NRT), encompassing a steadily growing array of products, is heavily promoted as a tool for smoking cessation. The UK Department of Health now recommends expanding NRT to pregnancy, to adolescence starting at age 12, and using NRT while still smoking (www.ash.org.uk/html/cessation/Smoking%20reduction/NRT051229.pdf). These recommendations lack evidence for effectiveness compared to improve counselling. In fact, NRT is more likely to perpetuate nicotine addiction with intermittent relapses to smoking than aiding cessation. Prenatal nicotine primes the adolescent brain for depression, for nicotine addiction in future years, and increases the risk of congenital malformations.

Non-smoking children who experiment with NRT may become smokers later. The spread of nicotine addiction will also be accelerated by the current trend to promote smokeless "harm reduction" tobacco products instead of urging cessation.

Tobacco use: prime environmental health concern among children in Russia

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Research focus: the use of tobacco as a development hurdle in Russia.

Research hypothesis: tobacco use in children has become a prime environmental health concern in Russia.

The data is obtained from international and domestic statistics, recent quantitative and qualitative research conducted by Russian Public Health Association in cooperation with World Health Organisation, Centers for Disease Control and Prevention (CDCP), Canadian Public Health Association, Research for International Tobacco Control, other organizations.

Research objectives:

- to review tobacco use in children as a threat to development and health of children in the world and specifically in Russia.
- to review tobacco policies of the Russian State, private businesses, civil society, international organizations and the tobacco industry as a 'Global Bad'.
- to recommend proposals for change in anti-tobacco policy.

Major findings and policy proposals:

- Russian population will benefit from ratification and implementation of the highest standards of FCTC;
- Tobacco control should become the issue of development, public health and of environmental protection, securing the right to clean air. Relevant State agencies should take a lead in these activities;
- Possibilities for development of tobacco control legislation at the level of subjects of Federation and municipalities should be opened. The Federal Law should set a minimal, not a maximal list and level of tobacco control measures.
- The leading subject of policy should be the State protecting national interests;
- Comprehensive ban on collaboration with the 'global bad', i.e. tobacco industry, as well as comprehensive strategy of tobacco control among children, is topical.

Pollution Reduction Options Network - PRONET

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The majority of the World Health Organisation (WHO) Member States in the European region have set up National Environment and Health Action Programmes during the last decade, confirming the great importance of environmental health protection. The importance of scaling down this approach to regional and local level is evident in order to improve the conditions of life.

There is a lack of systematic exchange of information and experiences among Member States on this issue. Thus, there is a need to identify and analyse national and regional activities and to exchange good practices.

The main objective of the PRONET project is to facilitate exchange and evaluation of interventions on environment and health exposure reduction measures on a regional level and promote implementation of successful initiatives in other regions of Europe. This project will focus on the exchange of useful practices in two areas:

- the reduction of traffic-related health hazards (air pollution and noise); and
- improvement of indoor air quality.

As they are key areas in environmental policy the health of the population will benefit significantly from exposure reduction measures.

This project will co-ordinate the body of experience in practical pollution reduction measures or strategies and will improve the efficiency and effectiveness of the design and implementation of measures aimed at reducing exposure to environmental health hazards. Communication, participation, socio-economic and gender factors are included in the analysis as they might influence the impact of exposure reduction measures. To do so, PRONET will set up an information exchange platform for the development of effective and efficient health promotion-based policies. Furthermore, this project will set up a network of regional authorities and researchers at European, national and regional level. Establishing a link through partners and member states to Transport, Health and Environment Pan European Programme (THE PEP) and other relevant projects will be part of the activities. At workshops and by surveys network members will come together to identify, analyse, assess and develop policy options to gain insight into interventions and to disseminate the results to all stakeholders in European regions to accelerate the progress in environmental health protection. The network will support the European Environment and Health Action Plan, the Thematic Strategy on the Urban Environment and ongoing work at the European Commission and Member State level on identifying the exposures causing the most significant health problems.

The results will be used to make recommendations for policies at regional level.

Children and chemical safety: framework for action to protect children from harmful exposures

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Whether you are a government official, a physician, a nurse, a teacher, or a parent, you face a variety of challenges to keeping children and families healthy. One important area that may be overlooked is the possibility of harmful exposures to chemicals in the environment. Yet every day children may be exposed to a variety of potentially hazardous chemicals in the air they breathe, in the food and water they consume, in their homes and schools, at work, and in play areas. Some of these chemicals are naturally occurring but others are a result of human activities. Either way, they may have serious effects on children's health. Children's harmful exposures to chemicals should therefore always be minimized and prevented whenever possible.

The social and economic cost of children's harmful exposure to chemicals can be high. In addition to direct medical expenses, there are sick days that keep children away from school and their parents away from work, and the emotional toll that childhood illness, disability and death takes on families and communities. Poor children are the most vulnerable and may suffer the most harm, as they tend to be undernourished, live in more polluted environments, and lack access to health care and education. Individuals, organizations, and agencies responsible for protecting children need to become more aware of the threats and take actions to prevent them.

The Intergovernmental Forum on Chemical Safety (IFCS) considered specific ways to protect children from harmful exposures and adopted recommendations calling for action by international organizations, national governments, and public and private sector institutions and individuals. These recommendations constitute a framework for action aimed at achieving measurable progress toward protecting children from chemicals in the immediate future. Numerous initiatives at the national and international level have begun this important work and provide models for additional efforts.

Development of WHO guidelines on indoor air quality

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Indoor air quality has a special role as health determinant, and management of indoor air quality requires different approaches than outdoor air. Therefore the working group of the recently published Global Update of the WHO Guidelines for Air Quality, recommended development of WHO guidelines for indoor air quality.

Based on this recommendation, World Health Organization convened a working group meeting for the development of indoor air quality guidelines in October 2006. Experts in epidemiology, toxicology, exposure assessment, developing country issues, indoor combustion, biological agents, building construction, ventilation and indoor air quality management participated in the meeting. The working group outlined the tasks required for the guideline development in 2007-2009 and recommended a list of special chemicals for which numerical guidelines can be prepared. The list includes formaldehyde, benzene, naphthalene, nitrogen dioxide, carbon monoxide, radon, particulate matter, halogenated compounds and PAHs (especially BaP). The meeting has also proposed ways to define guidelines allowing for reduction of health risks due to biological contamination. Instead of addressing each of the many individual biological agents which may pose a health hazard in indoor environment separately, the meeting recommended developing guidelines on their main determinants: dampness and mould and relevant characteristics of ventilation. In addition, separate guidelines on selected allergens (from house dust mites and pets) will be defined. Guidelines on indoor air quality preventing health impact of indoor combustion will consist of recommendations on stove venting, ventilation, on combustion quality and on fuels. Implementation of the meeting's recommendations started in 2007 with the preparation of guidelines on dampness and mould.

Acknowledgement:

see full list of WHO WG members in

http://www.euro.who.int/Document/AIQ/IAQ_mtgrep_Bonn_Oct06.pdf

Evaluation of microclimate indices in some preschools and schools institution in Tirana City-Albania

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Abstract: School's hygiene is the science that deals with the insurance, security, strengthening and development of children and teenagers health, providing the optimum sanitary conditions for their teaching and education because they are the future of the country. Growth of population's number in Tirana city (data from INSTAT) during this decade is not associated with increase of number of these institutions. From the other side, deficiency of investments presents poorly hygienic-sanitary conditions in these institutions.

Goal: Evaluation of the actual parameters of the microclimate indices in the indoor environment at the preschool and school institutions compared with the recommended value.

General Objective: Collection of the data of indoor air quality by measurements of indices of quality such as temperature, relative humidity, speed of air, volume of classroom, surface of the windows, number of children according as the classroom volume etc.

Specific Objectives: - Evaluation by means of measurements of the indoor and outdoor microclimate indices in these institutions (indoor and outdoor temperature, indoor and outdoor relative humidity, indoor and speed of air).

- Evaluation of classroom volume: length, wideness and highness.
- Evaluation of number of children according as the classroom volume.
- Evaluation of windows surface regarding to the natural lighting.
- Evaluation of recreative spaces.
- Stimulation of the interest groups (students, wife organizations, environmental NGO, etc.)
- Stimulation of the respective structures about modulation at the standard levels at the environments in these institutions

Methodology: The investigation is cross sectional type which contains direct measurements of the microclimate indices. The sampling is realized by multistage sampling skill based at the random numbers. In the first step are selected numbers of preschools and schools institutions (3 day care center, 3 preliminary schools, and 3 elementary schools) that are representative. After that are selected the number of rooms and classrooms (29 - rooms and 55 -classrooms).The investigation is realized during the autumn of 2003 (October-November).

Results and Discussions: - It is noticed a lack of recreative space in these institutions (59.2%).

- The index of the distance from traffic road and other pollution objects is not within standard levels (71%).
- The surfaces of the windows in these institutions are in standard levels.
- The indexes of rooms and classrooms volume according to the number of children are out of standard levels (52%)
- The index of the indoor air speed is not within the standard levels in some institutions (20.3%).
- The index of indoor relative humidity is not within the standard levels (59%).
- The index of the indoor temperature is in the standard levels (60%).

Recommendations: - Intervention by the Local Municipals and the Offices of the Public Health regarding to improving the sanitary-hygienic conditions.

- The monitoring of the indoor environments in these institutions by Institutions of Public Health, on purpose to improve and create the favourable conditions for well-being of children.
- Recommendations at the respective structures regarding the creation of the clearances in these institutions.

Indoor air pollution and prevalence of respiratory infection in children under 5 years – a rural study

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Object: Our aim was to find out the point prevalence of respiratory infection in children of rural area residing in single and double room dwelling huts.

Introduction: Half a million children die from indoor pollution in India. 28% of all deaths in developing countries occur in India from indoor air pollution.

Material Method: A questionnaire survey was done in three villages 25 Km south of Bangalore, prospectively. 612 huts dwelling were evaluated for respiratory infection (cold, cough, chest congestion). All are agricultural farm workers. Use dung cakes and agricultural waste as cooking fuel. Total of 602 children less than 5 years of age were evaluated. 332 children are from single room dwelling 280 children are from double room dwellings.

Results:

	Single room dwelling	Double room dwelling
Total number	332	280
Respiratory infection	203	98
Percentage	67.44%	32.56%

Conclusion: The point prevalence of respiratory infection in children less than 5 years in the rural area is 67.44% living in a single room dwelling in comparison to 32.50% in a double room dwelling. Unlike the cooking fuel is the same like dung cakes and agricultural waste.

Respiratory symptoms of school children and their home environment

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Introduction The prevalence of asthma and allergy is increasing in the industrial countries all over the world. Children are especially vulnerable to the effects of various risk factors causing chronic inflammation of the mucous membrane of the respiratory tract which tends to sustain in later life, too.

Objectives: to assess the prevalence of asthma and other respiratory symptoms among school-children living in various parts of Hungary and to assess the most important risk factors of these respiratory symptoms – in compliance with CEHAPE's Regional Priority Goal 3.

Methods: A cross-sectional epidemiological study was carried out in autumn 2005 covering all children visiting 3rd grade classes with more than 10 children in any elementary school of Hungary. Questionnaires on the children's present and past health condition, the parents' respiratory health and smoking habits, the home environment and the families' socio-economic status were sent out through the schools and the parents were asked to complete them. For the statistical analysis multiple logistic regression was used.

Results: 62,711 questionnaires (76.4% response rate from the participating schools) have been returned. According to the preliminary results covering about half of the questionnaires evaluated up to the present, the prevalence of children with bronchitic or asthmatic symptoms were 17.4% and 17.1%, respectively. The prevalence of asthma ever diagnosed by a physician was 7.2% and that of a doctor diagnosed allergic disease was 19.9%. Heating with coal or wood, industrial emission in the neighbourhood, pesticide use in the home, air conditioner in the child's room, mould growth and exposure to environmental tobacco smoke (ETS) were found to be the strongest determinants of respiratory or allergic symptoms of the children in the home environment.

Conclusions: Education of the parents (e.g. to avoid ETS exposure and pesticide use) as well as community action programmes (e.g. improved heating) can help in the elimination of the above mentioned risk factors from the home environment.

The health effects of mold in children

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Objectives:

1. Discuss the prevalence of mold exposure in children
2. Identify the different pathophysiologic mechanisms known to cause adverse health effects in children as well as those that are still unproven
3. Provide an overview of the diagnosis and treatment of mold-induced adverse health outcomes in children, including a discussion of the environmental evaluation.

Brief summary of content:

Mold is ubiquitous, both outdoors and indoors. Consequently, children constantly live and breathe in a milieu of, among various biological exposures, numerous fungi, their components, and their products of metabolism. Both non-controversial and controversial adverse health outcomes attributed to mold exposure will be discussed – their characteristics and the evidence for associations with mold exposure. This discussion will include the putative pathophysiologic mechanisms of injury, their clinical presentations, and appropriate use of environmental and clinical diagnostic tests in their diagnosis.

Blood lead levels and related risk factors among children aged 0-6 years in China

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Objectiv: To observe blood lead level and related risk factors among children aged 0~6 years old living in cities in China and to provide data for policy development to the prevention on environmental lead pollution.

Methods: A stratified-clustered-random sampling method was used. 17141 peripheral blood samples of 0-6 years old children from 15 cities in China were tested in 2004, 14737 from 14 cities in 2005 and 13584 from 14 cities in 2006. Tungsten atomizer absorption spectrophotometer was employed to determined blood lead level. Related factors were also studied using a standardized questionnaire. Data were analyzed on related risk factors affecting blood lead levels through multiple regression method.

Result: The mean blood lead level of 0-6 year old children in China was 59.52 μ g/L with 10.45% of those $\geq 100\mu$ g/L and 0.62% $\geq 200\mu$ g/L in 2004, 57.81 μ g/L with 7.93% of those $\geq 100\mu$ g/L and 0.96% $\geq 200\mu$ g/L in 2005 and 56.66 μ g/L with 7.35% of those $\geq 100\mu$ g/L and 0.82% $\geq 200\mu$ g/L in 2006. The blood lead levels seemed to have a trend of increase parallel to age among 0-6 years old children and were higher for boys (60.44 μ g/L in 2004, 59.73 μ g/L in 2005 and 57.85 μ g/L in 2006) than girls (56.21 μ g/L in 2004, 55.37 μ g/L in 2005 and 55.18 μ g/L in 2006). The risk factors which influence children's blood lead levels would include the type of housing, parent's education levels, social status and hobby, children's behavior habit, dieting habit and nutritional condition.

Conclusion: The blood lead levels of children in China were lower than data gathered from former national studies but higher than those from developed countries, suggesting that the government and the whole society should be aware of the problem on childhood lead poisoning.

The Pb level in blood of children in Copper Basin, Poland - thirty years of observation

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The monitoring of Pb concentration in blood (Pb-B) in children living on industrial risk regions in Poland (Higher Silesia and Copper Basin of Legnica – Glogow, LGOM) was initiated since the seventies. At this time the Pb-B concentration was below acceptable 10µg/dl only in 20% of schoolchildren in LGOM.

The average of Pb-B concentration in some selected risk localities amounted to 36 – 52µg/dl. In years 1974-1994 a 4-6 -fold decrease of Pb-B concentration was noted particularly since the eighties when the atmospheric Pb dust emission from smelting work has been significantly reduced. Then the average Pb-B concentration in children decreased to 10-28µg/dl dependently on selected areas.

The Foundation for the Children of Copper Basin was established in 1991 with an aim of Pb-B monitoring, treatment and prophylactic action as well as environmental health education.

Pb-B examination with ASA method among 25 657 schoolchildren from LGOM were performed in years 1991-1995 and the average Pb-B amounted 6.95µg/dl. 11 588 children were examined in years 1996-2002 and the Pb-B concentration lowered to average 4.6 µg/dl. Nevertheless in about 20% of children the Pb-B level still amounted above 6 µg/dl (the currently suggested acceptable limit). 6 681 children were examined in years 2003-2005 and the Pb-B concentration amounted 4.63 µg/dl (fluctuated between 3.7 µg/dl and 6.9 µg/dl, depending on estimated region). In 16.5% of children the Pb-B level still remained above 6 µg/dl.

A decreasing percentage of children, which crossing acceptable value of lead in the blood serum is satisfying, but it seems that extended cooperation between primary care centres and organisations taking care of the environmental health of children is still needed.

Effect of environmental lead on the health status of woman and children in developing countries

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Lead poisoning due to environmental pollution is having irreversible effect on health related problems especially to women and children all over the world. Lead is the most significant contributors to occupational disease in most of the developing countries due to lack of appropriate environmental policy. With no placental or the blood brain barrier for lead, women of reproductive age having higher body burden of lead are the source of lead to their child. In children, even moderate lead exposure is lowering IQ scores, on the other hand, it is a terrible thing to waste a child. Lead will not spare any organ in the body at any age.

The George Foundation sponsored population study in major India cities revealed unacceptable blood lead level of higher than 10 ug/dl in 51% of growing children. Estimated cost due to lead poisoning amongst affected children in India is over 60 million US dollars per year. Additional costs for adults identified are gastrointestinal disorders, anemia, reproductive effects (including birth defects), cancer, kidney damage, and cardiovascular disease (resulting from elevated blood pressure). Often described as the "silent epidemic", lead poisoning is one of the most prevalent global problem and preventable diseases. The World Health Organization (WHO) has estimated 120 million people being over exposed to lead (approximately three times the number infected by HIV/AIDS) and 99 percent of the most severely affected are in the developing world.[1] The savings expected from the development of appropriate policies for safe handling of lead poisoning is over 200 million dollars for a 5 year period. With this input to the Government of India unleaded gasoline was introduced throughout the country as one of the early success stories. Present scenario with 91% market share of lead based paints, presence of lead and other heavy metals in traditional medicines India and other developing countries are facing another serious treat of lead poisoning.

The National referral Centre of Lead Poisoning in India where most of the above studies were undertaken is currently working on the prevention of lead poisoning by developing policies for lead safe society. One of the ongoing project BEST (Better Environmentally Sustainable Targets) is through involving multi-stake holders around the globe selected as the finalist in the SEED award in 3rd IUCN.

[1] World Health Organization, Lead: Assessing the Environmental Burden of Disease at National and Local Level, p. 51, 2003.

Heavy metal poisoning from traditional medicines – an emerging problem?

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The use of traditional remedies is increasing in Europe, North America and Australasia. Chinese and Ayurvedic traditional medicines can contain significant quantities of heavy metals including lead, mercury, arsenic, thallium and gold. There have been a number of reports of clinically significant heavy metal poisoning related to use of these products in many different areas of the world. Studies in the United States have shown that Ayurvedic remedies containing significant quantities of heavy metals are widely available and we have treated 6 cases of significant lead poisoning related to traditional remedies in the last two years. In October 2005 the European Union passed a Traditional Herbal Remedies Directive that included a registration scheme for remedies sold over the counter. This requires these products to meet safety and quality standards. However it will not apply to products issued by traditional medicine practitioners. Clinicians need to be aware of the potential for heavy metal poisoning related to the use of these products and a traditional medicine history should become a standard part of the medical history in the assessment every patient. There is an urgent need for studies to quantify the frequency and potential risk of heavy metal poisoning from traditional remedies and for culturally appropriate education to inform the public of the potential for toxicity associated with these products.

Low blood lead levels and the cognitive development of children from different localities in Malaysia

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Introduction: A study on blood lead and cognitive development was conducted on primary school children at different localities in Malaysia.

Aim: The objective was to identify the relationship between low blood lead levels and cognitive development.

Methodology: A total of 413 children age 6½ to 8½ years from urban (236), rural (80) and industrial areas (97) were studied. Blood lead levels were analyzed with a graphite furnace atomic absorption spectrophotometer. The cognitive development was assessed using the 'McCarthy Scales of Children's Abilities Test' (MSCA).

Results: Significant differences were found in the mean cognitive development score ($F=16.36$; $p<0.001$) between children from the urban (94.40) suburban (101.24) and industrial (102.90) areas. Similarly, the mean blood lead levels were significantly different ($F=3.85$; $p=0.022$) between children from the urban (3.66 mg/dL), suburban (3.04 mg/dL) and industrial (3.54 mg/dL) areas. There were significant inverse correlations between blood lead and cognitive development score for all groups ($r=-0.309$; $p<0.001$), urban ($r=-0.268$; $p<0.001$) and suburban ($r=-0.820$; $p<0.001$) children, but not for the industrial children. A multiple regression model shows that low blood lead strongly influenced the cognitive development for all children ($F=13.41$; $p<0.001$) after controlling for confounders. Among the urban children, their cognitive scores were significantly influenced by blood lead and household income ($F=4.643$; $p<0.001$). However, among suburban children, the model showed that cognitive scores were significantly influenced not only by blood lead, but also by the mothers' education, number of siblings, sequence in the family and household income ($F=33.38$; $p<0.001$).

Conclusion: Low blood lead below 10 mg/dl could still influence the cognitive development of children. Urban children have higher blood lead levels but the suburban children with lower blood lead levels were also vulnerable to the effect of lead on cognitive development, together with the influence of several socioeconomic factors.

Key words: children with low blood lead, cognitive development, McCarthy Scales of Children Abilities (MSCA), lead exposure.

The results of the German Environmental Survey for Children (GerES IV) and their implications for prevention especially through NGOs

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The development of an environment-related health surveillance system is a main achievement of the German National Environmental Health Action Program (NEHAP). This system includes the German Environmental Survey for Children (GerES IV) that is performed in co-operation with the German Health Survey for Children and Adolescents (KiGGS) conducted by the Robert Koch-Institute. In GerES IV nearly 1,800 children were examined for their exposure to environmental influences by the use of human biomonitoring, indoor monitoring and questionnaires throughout Germany.

GerES IV provides current data on important parameters of children's environmental health (e. g. lead in blood). Moreover, we can identify trends over time by comparing the new data with results of former surveys.

A. Conrad (Federal Environment Agency, Germany) will give a short overview of the German Environmental Survey for Children and will present first results.

E. Petersen will report on successes and failures concerning two German projects dealing with advanced training programs for medical assistants, paediatricians and other physicians.

J. Hellmann will present evaluation results of advanced training for paediatric medical assistants and nurses during the last three years.

GerES IV provides a set of profound data on the environmental exposure of children in Germany. These representative data may support the implementation of projects in the field of environmental health. Survey results can also assist the evaluation of policy options. Therefore, the discussion will focus on how results of a representative environmental survey can provide data for the further work of NGOs.

- The German Environmental Survey for Children - selected results

André Conrad/Germany (Umweltbundesamt, Dessau/Berlin)

- Training Health Care Providers in environmental medicine and prevention: an overview and a perspective from Germany

Erik Petersen/Germany (Network CHE)

- Up grade courses for paediatric medical assistants and nurses: latest results of the evaluation of the past three years

Julia Hellmann/Austria (UMIT)

Up grade courses for pediatric medical assistants and nurses: latest results of the evaluation of the past three years

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The German Network for Children's Health and Environment (www.netzwerk-kindergesundheit.de) is offering a training program for paediatric medical doctor's assistants and paediatric nurses since five years. The courses are about 680 hours including a practical phase at the end of the curriculum training course. In these courses paediatric medical doctor's assistants and nurses are learning to motivate the children and their parents to healthier behaviours while the families are in the outpatient clinic for regular appointments their ordinary work

The training program imparts increases pre-existing knowledge, which includes the field of

- Methods and didactics
- Interaction between children, adolescents and their families
- The preventive medicine and the environmental health medicine
- Coordination and organisation of preventive medicine in the clinic

The paediatric clinic is an important setting for health promotion, because regular preventive medical checkups for children are well accepted and offer a unique opportunity to reach over 90% of all children.

In this important setting nurses and doctor's assistants with the above named training for "Preventive Assistants" have the opportunity to contact the patients frequently and use this opportunity to increase knowledge of the patient and caretakers to enable them to change behaviours.

Regular evaluation during and after the courses, which were conducted by the members of the German Network for Children's Health and Environment, prove the high quality of this curriculum. In the summer 2006 an evaluation was conducted regarding all participants (N=167) from the years 2003 until 2005. The evaluation showed the efficiency of the training program over a longer period. The results of the evaluation are very positive and the questioned participants demanded more training sessions to update their knowledge every year as well.

Potential mediation of PCB-related neurodevelopmental adversity by endocrine dysfunction

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PCB-associated neurodevelopmental adversity has been reported at environmental levels of exposure. Despite some discrepancies in detail neurodevelopmental delay/deficit was observed to be associated with PCB-exposure in most studies. Our experience is based on two cohorts recruited between the years 1993 and 1995, and between 2000 and 2002. In the earlier cohort pre-/perinatal exposure was in terms of indicator PCBs, whereas in the later cohort a larger spectrum of PCBs and PCDD/Fs was measured in maternal blood and milk. Using the Bayley-Scales (BSID) and the Kaufman-test (K-ABC) significant PCB-related cognitive deficit was observed at median PCB-levels of 404 ng/g milk fat in the earlier study. At median PCB-levels of 177 ng/g milk fat in the 2nd study no exposure-related BSID-decrement was seen at 12 and 24 months, any more. Thus, PCBs or PCB-associated PHAHs may have an adverse impact for early cognitive development at elevated levels of exposure, only. The mechanistic basis of such adversity is unclear. Endocrine dysfunction, related to the HPT- and the HPG-axes, is being discussed in this context. Therefore, in the more recent cohort both thyroid and gonadal hormones were measured in cord serum of the babies, and related to DL- and NDL-PCBs and PCDD/F-concentrations in maternal blood and milk. Median PCDD/F-concentrations in terms of WHO-Teq in maternal blood and milk were 15.3 and 13.1 pg/g lipids, and for indicator PCBs 149 and 177 ng/g lipids, respectively. No consistent negative associations between PHAHs and thyroid hormones were found. However, robust negative associations were seen between some PHAH-categories and both testosterone and estradiol. This is an interesting new finding, because both experimental and epidemiological observations suggest PHAH-associated masculinization/feminization following pre-/perinatal exposure.

Mercury neurotoxicity as a paradigm of developmental hazards

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The brain is known to be the target organ most sensitive to methylmercury toxicity; damage during early development is likely to be widespread and permanent. This conclusion emerged with delay from serious poisoning episodes. More recent studies have revealed that commonly encountered exposures from contaminated seafood may also cause effects on brain development, although less serious at lower doses. These effects have been documented by a variety of clinical approaches, including cognitive tests, neurophysiological measurements, and scanning methods. This evidence was first criticized because of uncertainties, assuming that they might have led to an overestimate of mercury toxicity.

Because methylmercury originates from freshwater fish and seafood, exposures occur jointly with various essential nutrients, such as polyunsaturated fatty acids (fish oil) that may confer beneficial effects on brain development. On the other hand, additional contaminants, such as PCBs, may also occur. All of these factors may cause confounding, and beneficial effects of nutrients may attenuate the apparent mercury toxicity. In addition, the precision of the methylmercury exposure assessment is crucial. Imprecision generally leads to an underestimation of the toxicity. Contrary to previous suggestions that mercury toxicity may have been exaggerated, current evidence shows that methylmercury toxicity has generally been underestimated, thereby leading to exposure limits that are too high to offer the protection intended.

Identification of health effects related to environmental neurotoxic agents

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There is a major concern all over the world about the increase in adverse health effects related to neurotoxic environmental factors. Most of the data currently available are from epidemiological human investigations or experimental studies of animal models. The translation of these approaches to individual clinical encounters is often difficult, also because there is still little information on the neurotoxic potential of the numerous chemicals present in our environment. Our experimental strategy to assess the potential neurotoxicity of a substance is based on the use of different approaches, stretching from behavioural studies to gene expression analyses. The final aim is to identify mechanism-based end-points that can be used for risk assessment in exposed populations. Recently, we have investigated the effect of developmental exposure to methylmercury (MeHg), by using a mouse model relevant for human exposure. In the MeHg-exposed animals, we found a predisposition to depressive behavior as well as learning disabilities. Treatment with antidepressant reversed depression-like changes. Neurotrophic factors are critical regulators of neuronal survival, synapse formation and connectivity in brain, and their mRNA levels are dynamically regulated by several factors that may produce long-term changes. We have analysed the expression of brain-derived neurotrophic factor (BDNF) mRNA in the brains of our experimental animals and found a significant decrease in the limbic system of MeHg-exposed male mice. Interestingly, the treatment with antidepressant restored the mRNA expression to control levels. In addition, exposure to MeHg induced long-lasting changes in the chromatin structure around BDNF promoter, which are consistent with reduced transcriptional activity of the BDNF gene. Our studies provide novel evidence that developmental exposure to MeHg induces behavioral alterations associated to chemical modifications of the genetic material (epigenetic changes). Overall, epigenetic changes may have a critical role in the onset of neurotoxicity, and studies on the correlation between gene-environment interactions and behavioural alterations are essential to move forwards the field of neurotoxicology.

Electro magnetic fields

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EMF (electric fields, magnetic fields, electromagnetic waves) is one of the grossly overlooked issues in environmental and public health especially when it comes to children. EMF is also one of the strongest growing sources of environmental exposure worldwide. Millions of people expose themselves and others day by day for minutes to hours with microwaves from mobile phones. Millions of people are exposed for hours up to the whole day to microwaves from mobile phone base stations, cordless telephone base stations, wireless local area network access points (WLAN) etc.. In addition due to electronic devices and sources in our electricity network the principal frequency of 50/60 Hz shows increasing harmonics and kHz waves called "dirty electricity" or "dirty power". All around the globe citizen groups in part supported by physician groups report distinct symptoms or illnesses they relate to our electromagnetic environment. The response of public health authorities to this problem is very different but shows a growing awareness. There is insufficient knowledge about EMF in society, public health and politics. There is an urgent need:

- to adopt the ALARA and ALATA Principle to EMF
- to implement EMF Public Health Research
- to implement an EMF Education Plan
- to implement an EMF Prevention Plan
- to implement EMF Exposure and Health Monitoring.

Children and mobile phones

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High frequency electromagnetic fields as used in mobile and wireless communication (mobile telephony according to the GSM and UMTS standard, cordless DECT phones, WLAN, Bluetooth), and since many decades used also in radio and television technology, are practically omnipresent. Possible adverse health effects of exposure to these fields have been a much discussed topic during the last decade. For these high frequency fields, the principal biological effect is the (dose-dependent) generation of heat. Current guidelines, limits and regulations prevent any such effect. Mobile phone calls may, in certain circumstances, lead to local exposures close to limit values. Recently, in view of the rapidly increasing use of mobile phones by children special emphasis has been put on the question whether or not there exists a special vulnerability of children. Arguments first raised by the British Independent Expert Group on Mobile Phones (IEGMP, 2000, "Stewart Report") were: the children's nervous system is still in development; their brain tissue has a greater conductivity due to its higher water content; children's heads would – for anatomical reasons – absorb more radio frequency energy than that of adults; children have a longer life time exposure. The greater flexibility of a child's pinna was supposed to lead to a lower distance between the mobile phone and the skull and thus to cause a higher exposure. Also, theoretical studies on high frequency EMF absorption initially indicated a larger absorption in a child's head as compared to the head of an adult (Gandhi et al. 1996, for a recent review see Christ and Kuster, 2005). As a result, a project "Mobile communications and children" within the European COST (Committee of Senior Officials for Scientific and Technical Research) framework was launched in 2002 in Rome. Two years later, the WHO organised a symposium on "Sensitivity of children to EMF" in Istanbul (WHO, 2004). Also, national boards on radiation protection dealt with this issue, e.g. the Health Council of the Netherlands in 2004 and the German Radiation Protection Commission (SSK) (cf. opinion on "Mobile radio and children", expressed on Dec. 5/6, 2006). In November 2006, the Forschungsgemeinschaft Funk (FGF; Research Association for Radio Applications), has organised a workshop on this topic. Taking all available results together, presently there are no science-based arguments for a higher sensitivity of children to high frequency EMF compared to adults. Most anatomical parameters (head's circumference, thickness of cranial bones, brain volume, thickness of the skin) and the developmental stage of the central nervous system (myelinisation, synaptogenesis) of, for instance, a 5 year old child are already quite similar to the situation in adults. However, little is known about the dielectric properties of the developing human brain. Also, the higher elasticity of the pinna of young children may lead to a higher energy absorption. Simulation-based studies seem to indicate however, that the effects of both factors will not be very large. They are comparable to differences in energy absorption due to the interindividual variability in anatomical parameters. A matter still under debate is the possible association between the risk of brain tumours, acoustic neurinoma, and parotid gland tumours and the use of mobile phones. To address this issue, WHO initiated the Interphone study (IARC, 2006), which is coordinated by the IARC. Final results of this multicenter study are not yet available. The results published so far seem to indicate that there is no substantial increase in the risk to develop a tumour as a consequence of frequent mobile phone calls. In the Interphone study, children had not been considered as a subgroup. However, an Interphone-kids study is under way. In summary, high frequency electromagnetic fields encountered in common life are most probably not a priority issue in children's environmental health. If children are advised as to make a "reasonable use" of their mobile phone with respect to the number and duration of calls, to prefer short messages or to use hand-free kits where possible, and to look for good conditions of radio reception, this recommendation is based on a kind of precautionary principle, not on scientific grounds.

Exposure of children to noise in different settings – PINCHE's policy recommendations

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Within the framework of the EU-funded Policy Interpretation Network on Children's Health and Environment (PINCHE), noise was considered as a factor that affects children adversely in the home environment, at school, in entertainment settings and with the contact with consumer products. Noise can have auditory and non-auditory effects on children. It affects hearing (including tinnitus), cognition and learning, sleep and well-being. In general, children are more susceptible in acquiring noise-induced hearing impairment. They may be less susceptible to developing stress symptoms than adults. Some noise episodes affect children's hearing instantaneously (e.g. firecrackers, percussion cap pistols); other effects are long-term and cumulative. Typical noise sources for hearing impairment and hearing symptoms are: noise in intensive care units, noise from toys and firecrackers, noise from audio and video equipment, and loud music in discotheques. Hearing impairment due to a loss of inner ear hair cells is irreversible and will progress throughout the children's life when they are further exposed to noise either in the environmental or occupational environment. Noise in schools from outdoor transportation and industrial sources, or from indoor sources (e.g. ventilation) and noise which is generated by the children themselves may cause deficits in reading and long term memory. It is estimated that approx. 15% of the European population, including children, are exposed to outdoor traffic noise levels (>65 dBA) that impair clinical health, and 30% are exposed to levels that affect subjective well-being. The PINCHE experts group on noise recommended the implementation of EU-legislation that sets the maximum output level of noise on personal audio equipment. Noise level of products should be labelled. Member states should implement adequate acoustic treatment of classrooms and child-care centres to improve the sound insulation and the reverberation time. On a local level, environmental and health impact assessment should be made compulsory for new schools and new roads in the vicinity of existing schools.

Long-term consequences of developmental exposure to neurotoxicants

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The foetus and the child are particularly vulnerable to pollution. The foetus shares the mother's exposure and accumulated body burden of pollutants, and some chemicals are transferred to the infant via human milk. During early life, cell differentiation and organ development must happen in a particular sequence and at certain times to create optimal functions of the mature organism. This vulnerability is particularly important in regard to the development of the nervous system: We have only one chance to develop a brain. Thus, developmental exposure to neurotoxic substances can cause serious disease and also widespread loss of IQ – the impact of which can be calculated in terms of billions of Euros per year.

As an example, ample proof exists of the neurotoxicity caused by methylmercury. Recent studies have revealed that commonly encountered exposures from contaminated seafood may cause less serious effects on brain development. These effects have been documented by a variety of clinical approaches, including cognitive tests, neurophysiological measurements, and scanning methods. Our studies have shown that methylmercury toxicity has generally been underestimated, thereby leading to exposure limits that are too high to offer the protection intended.

While the sensitivity of the brain is well documented from the unfortunate experience with substances like mercury, the effect of other pollutants is poorly documented. At least 200 industrial chemicals are known to cause brain toxicity in humans, and they must also be suspected to harm the developing brain. About half of these chemicals are produced in high volumes. Many more chemicals may cause similar risks, but the true extent of this problem is unclear. The REACH programme will not provide much new documentation on neurotoxicity. New approaches to protect the brains of future generations are therefore urgently needed.

Environmental noise exposure and hearing thresholds of school children in Kuala Lumpur, Malaysia

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Introduction: The study objective was to determine the environmental noise exposure, prevalence of hearing loss and the relationship between noise exposures and hearing thresholds of primary school children.

Methodology: A total of 110 Year One children of Malay ethnic aged 6 ½ to 7 ½ years from a National Primary School in Kuala Lumpur were recruited for this study. Environmental and personal noise exposures were measured with sound level meters and noise dosimeters, respectively. A questionnaire interview and audiometric tests were administered on these children.

Results: Environmental noise of at least 60 dB (A) was found inside and outside the classrooms irrespective of school days or holidays. Average exposure was to a sound level of 85.6 dB (A), a maximum of 109.6 dB (A) and a minimum of 51.7 dB (A).

The prevalence of high frequency hearing loss (HFHL) was 45.2% with 15.4% bilateral and 29.8% unilateral, while the prevalence of low frequency hearing loss (LFHL) was 61.5% with 41.3% bilateral and 20.2% unilateral. A typical noise dip was found at 6000 Hz. Personal maximum level (LMAX) have significant correlation with left ear thresholds at high and low pure tone average (HPTA and LPTA). General Linear Model shows at HPTA, right ear thresholds are influenced by hobby, house environment, birth weight and clinical history while the left ears are influenced by personal LMAX and clinical history. At LPTA, the right ear thresholds are influenced by hobby and birth weights while the left ear thresholds are influenced by the clinical history. Income per capita have a significant relationship with hearing thresholds at both ears.

Conclusion: The mild hearing loss were influenced by multi factors. For the left ears at both LPTA and HPTA it is due to the poor medical or clinical history while for the right ears at HPTA, it was influenced by the noise level and at LPTA, it was influenced by the low birth weight. The left ears were also more inferior than the right ear.

Key words: sensorineural hearing thresholds, personal noise exposure, prevalence of low frequency hearing loss, prevalence of high frequency hearing loss,

Traffic pressure on Dhaka City and its effects on children's Health

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Abstract: Based on data from different sources and road surveys conducted by the author the traffic pollution contribution in Dhaka city has been assessed and presented in the following sections

Air Pollution in Dhaka: Dhaka, is the capital city of Bangladesh, has grown into a busy city of about 6.5 million people with an area of 815 km². Dhaka city has heterogeneous traffic flows, as of 2003 an estimated total of 168,718 automobiles are on road. A substantial part of total traffic is non-motorized vehicles enhance severe congestion and pollution problem especially in road intersections. Around 80% of total trips in Dhaka city is comprised of non-motorized transport (NMT) and only 5.9% trips are made by motorized transport (MT). Average trip length of MT is 27 minutes. Only 0.9%. The maximum trips of vehicle modes are made by using rickshaw are 43%.

Ambient NO₂ Concentration: Interest in ambient NO_x concentration has increased due to health effects of this pollutant and its important role in the formation of photochemical oxidants; NO₂ is also a precursor to species such as nitric acid and nitrate aerosols, which contribute to acidification of the environment. a field study done to measure ambient NO_x (NO, NO₂) concentration in 28 street locations in Dhaka city.

Visible health Effects: Increase of asthma patient among the children under the age of 6 is: 26.5% and Hearing effects increase to 19% percent then the previous 3 years.

Recommendation: Formulate guidelines and make recommendations for setting National Air Quality Standard

The relationship between asthma and outdoor air pollution among primary school learners in Durban, South Africa

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The objective of this study was to determine the asthma prevalence among learners from Grades 3 and 6 at a primary school located between two refineries and near other major industries, e.g., paper mill and wastewater treatment plant. A further objective was to investigate whether outdoor air pollutants, specifically sulphur dioxide (SO₂), oxides of nitrogen (NO_x), ozone (O₃), total reduced sulphur (TRS), carbon monoxide (CO) and respirable particulate matter (PM₁₀) were associated with asthma symptoms in the study population.

Pollutants were measured continuously at the school during the 18-day study period (19th April-6th May 2001). During this period, the 222 participants were requested to perform peak expiratory flow manoeuvres 4 times on each school day and maintain a symptom and activities checklist. Respiratory assessments included structured parent and child interviews, baseline spirometric testing and methacholine challenge testing.

The asthma prevalence among the grades 3 and 6 learners was high with 52% having responses on the parent questionnaire consistent with known or probable asthma of any severity. Among these, 11% appeared to have moderate to severe asthma. Based on the methacholine challenge testing, 68% had airway hyperreactivity. Fluctuations in levels of both SO₂ and PM₁₀ were strongly and consistently associated with adverse symptoms for learners with moderate to severe asthma. Prior 1- and 2-day exposure to both SO₂ and PM₁₀ were associated with highly statistically significant increases in the odds of lower respiratory symptoms (cough, wheezing, chest tightness, shortness of breath).

While concentrations fell below international and South African standards, the study provides strong evidence that ambient air pollution exposures were associated with acute changes in health status among learners with moderate to severe asthma.

Chair of epidemiology and preventive medicine

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The purpose of the study was to test the hypothesis that infants with higher prenatal exposure to fine particles (PM_{2.5}) are at greater risk of developing respiratory symptoms and that fish consumption in pregnancy may modulate the effect. The study was carried out in a cohort of 465 newborns in Krakow (Poland) who have been followed over the first two years of life and for whom data on the occurrence of respiratory symptoms and measurements of personal air monitoring in the second trimester of pregnancy were available. The incidence risk ratio (IRR) of respiratory symptoms due to prenatal PM_{2.5} exposure were adjusted for potential confounders (gender of child, breast feeding, parity, maternal atopy, maternal education as a proxy for the socio-economic status, exposure to postnatal environmental tobacco smoke (ETS), and moulds in households) in the Generalized Estimating Equations (GEE) statistical models.

The adjusted risk of coughing was associated significantly with PM_{2.5} level (IRR = 2.51; 95%CI: 1.77 - 3.58), moulds in the household, parity, maternal atopy and postnatal ETS, but was lower in girls, and in infants whose mothers consumed more fish in pregnancy (IRR = 0.84; 95%CI: 0.79 - 0.91). The risk of wheezing was also correlated significantly with the prenatal exposure to PM_{2.5} (IRR = 1.36; 95%CI: 1.29 - 1.43), presence of moulds, parity, maternal atopy and postnatal ETS. However, the occurrence of wheezing was associated inversely with the gender of child, gestational age, and fish consumption in pregnancy (IRR = 0.97; 95%CI: 0.95 - 0.99). The interaction term (PM_{2.5} category x fish consumption level) was significant (IRR = 0.80; 95%CI: 0.72 - 0.89). Similarly, the risk of difficult breathing increased with prenatal exposure to PM_{2.5} (IRR = 1.18; 95%CI: 1.12 - 1.25), moulds, maternal atopy, and parity. The symptom occurrence was lower in girls and associated inversely with the gestational age, and fish consumption in pregnancy (IRR = 0.94; 95%CI: 0.92 - 0.97). The interaction term (PM_{2.5} category x fish consumption level) was significant (IRR = 0.81; 95%CI: 0.72 - 0.91). Conclusion: The results of the study may support the hypothesis that prenatal exposure to immunotoxic components of PM_{2.5} may impair the immune function of the fetus and subsequently may be responsible for an increased susceptibility of newborns and young infants to respiratory infections.

WHO training package on children's health and the environment for the health sector

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It is estimated that, worldwide, more than three million children die every year due to diseases linked to the environments where they live, learn and grow. Diarrhoea, respiratory diseases, malnutrition and many other health effects in children are linked to environmental risk factors present in unsafe water, polluted air and contaminated food and soil. However, health care providers may be unable to recognize, assess and manage these environmental risk factors and prevent children's exposure. Furthermore, health care providers may recognize environmentally-related diseases, but feel that they are not in a position to induce change.

As the solution is to enable those "in the front line" - the health professionals dealing with children and adolescents' health - to recognize and assess diseases linked to, or triggered by environmental factors, the World Health Organization has prepared a Training Package for the Health Sector with the support of USEPA and in collaboration with NGOs.

Several modules have been developed and pilot tested in a number of "train the trainers" workshops around the world: Mexico and Cyprus (2004), Italy, Kenya and Argentina (2005), Italy, Argentina, Chile, Paraguay, Canada, Cyprus, Kazakhstan (2006) and upcoming workshops in India, Haiti, Argentina, Mexico, Singapore and Italy (2007). Some of these events are organized with international and local paediatric associations and other scientific bodies following certain procedures that include a pre-workshop survey and post-workshop evaluation. Both WHO staff and local/regional experts provide the faculty for the workshops. The CDs containing selected modules are handed to qualified participants, able to adapt the contents to their specific needs and disseminate the new knowledge acquired in their own settings.

Health professionals attending these workshops and using the modules are positive about their effectiveness. Their feedback and suggestions for further development are extremely useful. Furthermore, the training events organized represent excellent opportunities for interaction and dialogue among professionals with a common interest in CEH, for networking and for sharing experiences that will aim at providing healthier, cleaner and safer environments for children.

The next steps for the package include (i) completing the preparation of modules, (ii) refining the evaluation tools, (iii) translating them into Spanish and French and (iv) converting the modules into an e-learning package. New partnerships to promote more comprehensive training events are being established. Also, a set of modules on "Principles for Evaluating Health Risks in Children Associated with Exposure to Chemicals" (EHC) as well as a new set of modules on embryonic, fetal and pregnancy's environmental health are being drafted.

ISDE training possibilities

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The International School on Environment, Health and Sustainable Development - SIASS has been promoted by the International Society of Doctors for the Environment - ISDE in collaboration with Agencies for Health and the Environment of the Tuscany Region. SIASS aims to promote integration among representatives of the International, National and local Administrations and representatives of Associations and Professions to evaluate knowledge and experiences and elaborate eventual solutions on health issues; the School promotes training activities as moment of integration among involved subjects and base for interventions.

The initiatives promoted by SIASS are related to: poverty, environmental risk and health; environmental health risks and conflicts communication and management; health profiles; integrated health plans and environmental health policies and strategies at territorial level; eco-building and energy saving in public organizations; waste management and impact on health and environment; avoidable mortality in high environmental risk areas; health promotion and health oriented paths; policies and strategies to reduce urban air pollution; road safety; children's environmental health; promotion of networks for training on environmental health: training for trainers; promotion – using the environmental history as a tool - of the GPs holistic role within health-environment integrated strategies and policies.

Actions taken in South America by INCHEs and ISDE: education, CEH Units, CEH's profiles, indicators and multisectorial participation in the last three years

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This is an example of NGOs, governments and other sectors working in partnership on interventions to promote positive changes on children's environment. This presentation will provide information on the work done in 7 countries in South America always promoting partnership among governments, scientific and professional societies, universities and public interest NGOs. AAMMA, ISDE and INCHEs have been developing innovative multi-sectorial strategies to carry on activities in South America since 1998 by informing, educating, promoting environmental epidemiological studies and encouraging the organization of CEH Units.

The Societies of Paediatrics of the region were incorporated in the activities since the beginning by promoting the creation of Working Groups on Children's Health and Environment, delivering a survey to paediatrician members of these societies to collect information on the perception on CEH's issues by the professional and general community and capacitating paediatricians (using WHO Modules on CEH for Health Care Providers in Spanish). In Argentina, different sectors working together are building a CEH Profile that includes CEH's indicators, literature review and case studies.

The role of Non Governmental Organizations (NGOs) is multi-faceted and they are clearly emerging on Children Environmental Health (CEH) issues as effective catalysers of multi-sectorial cooperation. NGOs are approaching CEH in an innovative manner creating successful partnership for action among the main actors orientated to protect children's health from environmental threats. NGOs, governments and professional organizations often look at issues from different perspectives but by working together they have the opportunity to induce change and produce an impact at different levels.

The International Society of Doctors for the Environment (ISDE) and the International Network on Children's Health Environment and Safety (INCHEs) have been developing CEH strategies based upon collaboration, working inter-regionally and with different sectors, including the health care providers, also networking with other professional sectors, the community, governmental authorities, decision makers, politicians, international organizations and other environmental or interest NGOs.

The German Health Interview and Examination Survey for Children and Adolescents (KiGGS) – First results

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The German Health Interview and Examination Survey for Children and Adolescents (KiGGS) was conducted by the Robert Koch Institute from May 2003 till May 2006. The aim of this nationwide, representative survey was to collect comprehensive data about the health status of children and adolescents in Germany as a basis to health care providers, health authorities and politicians for decision making and for concepts of prevention. KiGGS was financed by the Federal Ministry of Health (BMG) and the Federal Ministry of Education and Research (BMBF). This survey is based on a core survey (Health survey) supplemented by modules of subsamples (Environment, Mental health, Motor fitness/Physical activity, Nutrition, Federal state extension). The main focus of this presentation is the programme of the core survey (KiGGS) and its first results. A total of 17,641 children and adolescents aged 0 to 17 years participated in the survey, among them 8,656 girls and 8,985 boys, 17% with migration background. The participants were recruited at 167 points across Germany. The programme consisted of age-specific questionnaires, medical examinations and tests, a computer-based parental interview by physicians and laboratory tests of blood and urine. The participation of 66.6% was higher than in comparable population-based surveys. Main results are: 15% of children and adolescents between the ages of 3 and 17 are overweight, and 6.3% suffer from obesity. No clear differences between boys and girls were detected. 21.9% of children and adolescents in the sample were identified as being at risk of eating disorders. On the basis of our data, 16.1% suffered from a current atopic disease. The incidence of allergic disease increased with age. The majority of children aged 3 to 10 are active regularly. Also among adolescents (11-17 years) sports and exercise activity is very common. In contrast to children significant differences in physical activity between sexes are seen for adolescents. The issue no. 5/6 of the journal "Bundesgesundheitsblatt" will be used to present the complete results of KiGGS (see also <http://www.kiggs.de/service/english/>).

German environmental survey IV: Environmental tobacco smoke (ETS) exposure of German children

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Introduction: The German Environmental Survey (GerES) is a large scale population study which has repeatedly been carried out since the mid-1980s. Main objectives are to generate, update, evaluate and communicate these representative data. GerES IV (2003 - 2006) is the first survey focussing solely on children. It is performed in co-operation with the National Health Interview and Examination Survey for Children and Adolescents (KiGGS), which is conducted by the Robert Koch Institute, Berlin.

Methods: In GerES IV 1,790 children aged 3 to 14 years were selected at random from the representative cross-sectional sample (N = 17,641) of KiGGS. The investigation programme comprised, inter alia, the administration of questionnaires, human biomonitoring and indoor air monitoring.

Results: Approximately one quarter of the 3- to 14-year old non smoking children in Germany were exposed to ETS at their homes (as reported by their parents).

Depending on the number of smokers in the household, the geometric mean cotinine concentration in urine differed significantly: < 2 µg/L (no smoker), 2.6 µg/L (one smoker), 4.8 µg/L (more than one smoker).

GerES IV data indicate that maternal smoking may cause higher ETS exposure than paternal smoking. The relationship between parental smoking behaviour and ETS exposure was strongly confounded by social status.

Tobacco smoke contains a number of volatile organic compounds. Smoking at home was, inter alia, one of the most important predictors for benzene concentrations in indoor air.

Conclusion: ETS is an important exposure pathway for German children. Strategies for prevention of ETS exposure have to be pursued in order to improve health outcomes for children.

Acknowledgements: The financial support of the Federal Ministries for the Environment, Nature Conservation and Nuclear Safety and of Education and Research is gratefully acknowledged. Field work of GerES IV was carried out by the Robert Koch Institute, Berlin.

Prenatal exposure to ambient pollutants: the INMA cohort in Valencia, Spain

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Objectives: To present the protocol for assessing exposure to ambient pollution in a birth cohort in Valencia (Spain) and its preliminary results.

Contents: Six groups in Spain (Menorca, Granada, Valencia, Sabadell, Asturias, and Basque Country) are carrying out birth cohort studies, all of them integrated in the INMA (Environment and Childhood) Collaborative Research Network. The project aims to a) describe the exposure to environmental pollutants and the internal dose of chemicals during pregnancy and early childhood, b) evaluate their impact on foetal and infants' development and health.

Extensive assessments are being carried out on 4000 pregnant women and children. The cohort of Valencia started in February of 2004 and accounts for 856 women spread out over a great area covering a wide variety of environmental conditions. The area was divided in 4 different zones: urban (U), metropolitan (M), semi-urban (SU) and rural (R). Data on toxicant exposures are gathered by questionnaires, biological samples (1-hydroxypyrene -1-OH-P- in mother's urine; organochlorine compounds and metals in mother and cord blood;), environmental measurements (air and water pollutants), and public registries.

Preliminary results on outdoor air pollution concentrations in Valencia for NO₂ mean levels were 47.5 (U), 38.8 (M), 25 (SU) and 13.7 (R) µg/m³. The correspondent levels for PM₁₀ were 40.4, 38.5, 27.2 and 21.0 µg/m³. Indoor levels of NO₂ ranged from 2 to 149 µg/m³, and benzene levels ranged from 0.01 to 14 µg/m³. Trihalomethane levels in Valencia were 75.6 in U-M areas, 24.4 in SU and 10.9 mg/L in R. In the pilot study, the mean values for 1-OH-P (n=16) were 0.62 ng/ml (0.94 ng/ml in smokers and 0.21 ng/ml in non-smokers. Organochlorine compounds (n=20) were detected in most of samples, and total mercury geometric mean was 9.9 µg/L (95% CI: 9.0, 10.8).

Conclusions: Results suggest substantial variability in exposure to air pollution, being area of residence and life styles important determinants. This study will provide an individual assessment of exposure to ambient pollution during pregnancy to be related with reproductive and infant health outcomes.

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Growing in France: The elfe birth cohort

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Background: As early as at the foetal state, children are exposed to agents that immediately impact his health as a child but could also compromise his future health as an adult. Scientific knowledge concerning risk factors remains incomplete. Cohort design is the best tool for unbiased measure of exposures and their impact during key periods of the growth. The first French National Environment and Health Action Plan was adopted in June 2004. One of the twelve priority actions of this plan is to launch a nationally representative cohort of 20,000 children, to be followed from birth to adulthood.

Objectives: This study aims at describing children's health at different ages; assess levels of exposure to the main environmental pollutants and analyse the links between exposure and health. A particular emphasis will be put on the combined interactions and effects between several agents. Beside environmental health, the complete project has also an important sociologic component, which covers financial, familial and educational factors and outcomes.

Methodology: All babies born on specific days during the year 2009 will be enrolled.

Questionnaires and biological samples will be collected at birth to evaluate the foetal exposition to toxic substances. After birth and through all the follow-up period, data will be harvested in several national databases. Children's addresses will be geocoded and linked to databases on geographic sources of pollution. Specific data collections will also be organized (face-to-face questionnaires, phone interviews, medical visits including collection of biological samples, environmental sensors posted in the children's homes). A first test of the questionnaire will take place in April 2007 and a complete pilot survey will take place during the fall of 2007.

Discussion: This project parallels several other cohort studies in Europe, North-America and the Asian-Pacific Region. Lots of discussions are currently going on the cost-effectiveness of such projects, their interest for research but also for surveillance, and how to network and integrate data from various national cohorts.

Heavy metals

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Although some of the major health hazards linked to heavy metals have been known for centuries, a growing body of evidence is nowadays linking these metals to a number of adverse health effects, developmental problems and aging processes.

Numerous studies are going on worldwide to identify previously unrecognized health effects of heavy metals. In the symposium on "Monitoring children's exposure" the WHO Regional Office for Europe work on this aspect will be presented.

Environmental challenges and children health in Armenia

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Chemical exposures, both direct and indirect, may be as threatening to human health as infectious diseases. Long-term chemical exposures may have a serious impact on public health, especially in the cohorts of children, as they are vulnerable to environmental factors. Potential adverse health effects of chemical exposure in children depend on toxicity, dose, duration, and degree of contact.

Considering the importance of milk and dairy products for children, the goal of this research was to determine the level of contaminants in milk and dairy products from both agricultural and industrial areas in Armenia.

Samples of milk and cheese were taken from private enterprises (farms) of Armenia. Full-fat and low-fat cheeses prepared from cow and sheep milk were taken for analyses.

Analyses for Persistent Organic Pollutants (POPs), organochlorine pesticides and PCBs, in samples were accomplished using a gas-liquid chromatograph with an electron capture detector.

Monitoring studies were performed to determine the residual amounts of several POPs in milk and dairy products. In milk samples from an agricultural district PCBs were at concentrations ranging 2.12 - 7.45 mcg/L, while in samples from industrial districts, PCBs made 1.13 - 5.13 and 2.04 - 4.53 mcg/L, respectively. POPs were found in almost all samples of cheese from industrial districts.

These data indicate: children in Armenia may be exposed to POPs through ingestion of milk and dairy products. Poverty, malnutrition, and other stressors can increase the susceptibility of children to harmful environmental factors.

Preparing the nursing workforce in environmental health

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The International Council of Nurses has a position on “Reducing Environmental and Lifestyle-related Health Hazards” within which is calls for “ensuring that nurses have sufficient information and education to effectively carry out their role in hazard related health promotion and counselling”. In the U.S., the National Academy of Science Institute of Medicine has noted that environmental health content is absent from nursing school curriculum. As such, nurses may lack sufficient skills and knowledge to assess and address (treat and prevent) injuries and illnesses related to environmental factors. Anecdotally, this same deficit is experienced by nurses globally. The first and only graduate program in environmental health nursing is at the University of Maryland School of Nursing where it has developed and delivered curriculum sufficiently rich in environmental health that a new cadre of environmental health nursing leaders is emerging. Additionally the program 1) Assists faculty at other nursing colleges/universities with integration of environmental health into their curriculum (over 200 faculty trained); 2) Provides opportunities and support for doctoral students to engage in environmental health research; 3) Creates resources – curriculum, workshops, web-resources, factsheets, etc. – to promote environmental health for the nursing profession, including education, clinical practice, research, and advocacy/policy. The curriculum focuses on hazard identification in homes, schools, and the community; the relationship between health disparities and environmental justice; special vulnerabilities to environmental exposures through the life cycle; and policies (macro and micro) that impact environmental health. This presentation will describe successful efforts to develop and integrate environmental health curriculum; faculty development efforts; integration of environmental health education, resolutions, principles, and expertise within the national nurses association and nursing subspecialty organizations in the U.S., as well as the International Council of Nurses. It will also note the important support and collaborations from governmental agencies, foundations, and non-governmental organizations (locally, nationally, and internationally).

Children's clinic glanzing, the first PVC free neonatal intensive care Unit (NICU)

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Objectives: Polyvinylchloride (PVC) plastic is a synthetic polymer resin, originating from polymerisation of the monomer vinylchloride (VCM). 57% of the weight is caused by chlorine. Pure PVC is a stiff material, therefore low molecular softeners, mainly phthalates and adipates, are added in the polymer matrix. These toxic phthalates should be avoided.

Summary of Content: Medical concerns focus on the migration of the softener DEHP (Di-(2-ethylhexyl) phthalate). PVC medical products contain 12 to 80 weight percent DEHP, which is volatile and can dissolve from PVC tubes into the patient's blood. DEHP is fat-soluble, may cause liver and skin diseases, impair the cardiovascular and reproductive system and may possess hormone function. Measurements of the British ministry of health show high values of DEHP in umbilical cord blood. EU-directive 2001/59/EC (August 6, 2001) classifies DEHP as "dangerous for reproduction". According to the EU-medical product guideline 98/79/EWG, PVC-free products should be used for indwelling lines. PVC is considered very dangerous in neonatology and dialysis, especially for repeated blood transfusions and TPN.

In the Children's Clinic Glanzing, a marked reduction of PVC containing waste was achieved: PVC proportion of total waste was 10% in 1990, 2.5% in 1995 and 0.21% in 2005. The number of PVC containing products used per year in the NICU was 15,9% in 2001 and 5,1% in 2005, respectively. PVC content in medical products (weight percent per year) was 4,6% in 2001 and 3% in 2003, respectively.

Conclusions: Attempts of hospital organisations should be undertaken to force the industry to provide PVC free products at reasonable prices, to achieve complete avoidance of PVC containing (medical) products and thus do not harm premature babies or other patients.

Ecological sanitation in rural Armenia

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Objectives:

- To establish a sustainable, affordable and safe school sanitation system in village Hajanist in Armenia
- To provide an appropriate, comfortable solution where outdoor pit latrines are the norm
- To introduce approaches of ecological sanitation in rural Armenia

Brief summary of the content:

The need of an improvement of the actually inadequate sanitation for the school children in Hayanist had a very high priority for all community.

The project serves as an example of how sanitary conditions in rural areas without any connection to sewage or central water supply system can be improved and how the health risks could be reduced.

In addition the population became aware of the advantages of urine diverting toilets regarding water and health protection.

A very crucial factor is the real understanding of the facility and its effects by the stakeholders. This was addressed in the workshops, which were held before the installation of the toilets, and by the easy to understand posters for the children.

With proper education even 6 year old children understand the principle of urine diverting toilets as a part of ecological sanitation.

Conclusion:

The new toilet system was accepted very well by the teachers and the pupils. The interest of the community in ecological sanitation became very high and in a follow-up projects more ecosan toilets will be installed for households and other schools. This pilot-project can serve as an example not only for other Armenian villages, but for many Eastern European, Caucasus and Central Asia (EECCA) countries, which are facing similar sanitary, environmental and health-problems. The establishment of ecological sanitation is especially reasonable in regions with no central water supply, with no adequate sewage systems and no sanitation except pit latrines.

Skin cancer prevention: children's health education on protection behaviour from sun exposure and the assessment of its efficiency

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Background: Childhood exposure to ultraviolet (UV) light increases risk for skin cancer as an adult, thus starting positive sun protection habits early may be key to reducing the incidence of this disease.

The objectives of the study were to assess schoolchildren's knowledge about harmful impact of ultraviolet light and sun protection behaviour, the possibility of altering children's behaviour in the sun via education program.

Results: The study of the efficiency of the self-designed educational program "Let's know the Sun Better" included 213 fifth grade pupils (113 boys and 100 girls) from Kaunas City schools. The pupils were differentiated into two groups: the experimental (n = 106) and the control (n = 107). The anonymous questionnaire based inquiry before the application of the educational program showed that children's behaviour in the sun was careless: 40,4% of the studied children noted that they have experienced severe sunburns; 54,0% of them spend three or more hours on the beaches, most frequently, between 11am and 3 pm. Not all the children used sun protection measures. Only 18.8% of children used sunscreen, but only 7.3% of them knew how to use it properly. The second inquiry was performed after the schoolchildren were able to apply the recommendations of the educational program in practice during the summer. The data of this inquiry showed that the knowledge, attitude, and behaviour in the sun of experimental group were better compared to the control group. Significantly more schoolchildren in the experimental group (44,1%) compared to the control group (8,5%) used sunscreen properly and knew which sunscreen is the most suitable (respectively, 42,3% and 20,6%; $p < 0,05$); children in experimental group more frequently wore long-sleeved shirts (21,0% and 7,5%) wide-brimmed sunbonnets (37,1% and 10,4; $p < 0,05$), and sunglasses (61,9% and 44,3; $p < 0,05$) on beaches.

Conclusions: The findings of the study proved both the necessity and the efficiency of the prepared educational program.

Integral health and children's education for sustainable development: look from Ukraine

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Health and Environment (H&E) Education as an important part of Education for Sustainable Development (ESD) is a process in which individuals gain an education about the latest scientific breakthroughs and awareness of interdependence of H&E. To achieve this, it is essential to change educational methods that contribute to environmental damage negatively influencing the health, especially, of children as risk group. The UNECE Ministers endorsed the Statement on ESD at their Conference in Ukraine (Kiev). It is important that all children should be afforded opportunity of access to the H&E Education - the more and the deeper children know about Health and Environment, the better for their health. Children need to be taught much more and deeper than just hygienic rules following - as University professors, we believe that at the heart of H&E Education even for children should be put an understanding of their health problems caused by environmental influences which are in an important sense inherently theoretical or academic. We favour the transmission of simple but well organized bodies of H&E knowledge to children even in kindergarten – it should produce not learned but learning children equipped to acquire further H&E knowledge by their own effort, especially, to integrate H&E issues. Early initiation of children into basic forms of knowledge can assist them to understand complex H&E integration issues later. Providing theoretically sound Education for Sustainable Development for children and cultivating healthy habits and healthy attitudes in them can contribute significantly to children's health and Sustainable Development on our planet. According to this Statement, the Laboratory of Education for Sustainable Development of the Ukrainian National Mining University was created to perform comparative research and H&E implementation measures in Ukraine and at a European scale.

On the basis of the fundamental Noosphere concept of a prominent Ukrainian thinker Volodymyr Vernadsky we have developed 10 years ago at the Institute of Medical Ecology (Dnipropetrovsk) the concepts of the Integral Health and Sanosphere. Our concepts are very helpful in connecting environmental contaminants and children's health issues in the world, creating H&E curricula for different sorts of children (e.g. rural and urban children), and generating standardized international questionnaires for children and youth. We have found that schools and Universities have not communicated H&E values (to which all children should have access) effectively - most students are well-intentioned (girls are more motivated), but many (especially, in Ukraine) are not well-informed. Our pedagogical model represents 7 aspects of the Sanospheric Consciousness: Integration, Information, Motivation, Intention, Volition, Action and Reflection that are of importance to create effective H&E curricula for children. We have found that a serious understanding of H&E issues and the basic research findings in paediatric environmental health are beyond the reach of Ukrainian teachers. Even Ukrainian paediatricians are ignorant, e.g. in Endocrine Disruptors or Nanotechnology topics. But without a serious understanding teachers will keep on offering disintegrated knowledge of H&E, and children will keep on forgetting it, once exams are over. Therefore, a program which applies our methodology has been developed with the teachers in an extremely polluted Dnipropetrovsk region and helps educators bring the H&E science in their classroom across disciplines and minimise childhood exposure to environmental contaminants. An Integrated Framework may help to overcome some problems that may hamper introduction of Children Health issues in Education for Sustainability on an international scale and integration of the environment, economy, and Children Health issues into political decision making.

Pesticides and children

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WHO Regional Office for Europe and IUPAC are jointly developing training materials to educate children about protecting themselves from the harmful effects of pesticides and to develop a safety culture for the future.

The training materials include general facts about chemistry, risk assessment, POPs, safe handling, preventing contamination, protecting oneself, others and the environment from harmful effects.

Training tools will make use of the “WHO-UNEP Resource tool on sound management of pesticides and diagnosis and treatment of pesticide poisoning” and scientifically sound information from government, and other reliable sources.

Combined health effects of prenatal pesticide exposure and malnutrition in developing countries

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Childhood development and diseases that appear in later life stages may appear as an apparent consequence of have malnutrition prevalent in developing countries. Stunting is often used as a maker of malnutrition during early development. The associated neurobehavioral diseases and deficits can have serious social and economic effects. The wider implications of these adverse health effects have recently been explored with a focus on malnutrition, but the concomitant impact of exposure to pesticides and other neurotoxicants also deserves consideration.

In our first pilot study, we studied 79 children attending the two lowest grades of a public school in a community with extensive floriculture activities. Thirty-seven of the mothers had been working in flower plantations during pregnancy, while the others had no known neurotoxicant exposures of concern.

Among a small number of clinical outcomes, we found that increased (systolic) blood pressure and deficits on a neuropsychological test of visuospatial function were associated with prenatal pesticide exposure. Stunting was also associated with adverse health outcome in this age group, but no confounding was apparent, and the effects appeared to be additive. Current exposure to pesticides was associated with an increased simple reaction time only.

Prenatal pesticide exposure may cause lasting neurotoxic damage that add to the adverse effects of malnutrition in developing countries. The effects differ from those due to acute pesticide exposure.

Policy implications of DDT and malaria in Africa

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The Stockholm Convention is a landmark treaty that seeks practical steps to eliminate environmental threats posed by persistent organic pollutants (POPs) including DDT. Its overall objective is “to protect human health and the environment”. DDT like other POPs are used in the tropics but its effects are not localized and are felt in distant places like the North pole. The Stockholm Convention targets an initial list of twelve POPs for phase out, with exemptions for limited use of DDT for public health interventions. Malaria imposes a horrendous social and economic burden, yet the deeply entrenched poverty in these nations itself poses a massive challenge to launching and sustaining health care programs that are crucial to combating malaria and other diseases successfully. Sub-Saharan Africa has the highest per capita burden of disease in the world. Malaria alone accounts for more than 2 million deaths annually. The clinical caseload due to malaria is estimated at 500 million annually. In Africa malaria is a leading cause of infant mortality as well as deaths among pregnant women. Approximately four children die per minute from malaria related morbidity (Roll Back Malaria Information Sheet). The estimated annual direct and indirect costs of malaria were US\$800 million in 1987 and were expected to exceed US\$1.8 billion by 1995. Currently 22 African countries have applied for exemptions to use DDT for public health interventions under the Stockholm Convention. DDT and malaria present new sets of policies with limited options if the Convention is to be successfully implemented. This presentation argues that policy makers need to consider new and emerging evidence of DDT toxicity, consider these against the malaria disease management and control but above all be guided by the precautionary principle. The challenges for African countries using DDT are to comply with the Annex B part II of the Convention that spells conditions for use, Article 5 which urges for continual minimization towards eventual elimination, Article 10 that requires Parties to involve the vulnerable populations in the development of interventions as well undertake public education and awareness on the health and environmental effects of DDT and other POPs. The presentation will also examine evidence of DDT toxicity that need to be considered and highlight alternatives to DDT for malaria vector control. It will conclude with malaria control funding options.

Household pesticide use and childhood leukemia and lymphoma: the ESCALE study (SFCE, *Société Française de lutte contre les Cancers de l'Enfant et de l'Adolescent*)

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The role of household exposure to pesticides in the etiology of childhood hematopoietic malignancies (HM) was investigated from the national population-based case-control study ESCALE, carried out in France over the period 2003-2004.

A total of 764 cases of acute leukemia (AL), 130 of Hodgkin's lymphoma (HL), 166 of non-Hodgkin's lymphoma (NHL) and 1681 controls frequency matched with the cases on age and gender were included. Maternal household use of pesticides during pregnancy and paternal household use of pesticides since conception were obtained by telephone interview of mothers using a standardized structured questionnaire identical for cases and controls. We distinguished insecticides, used either at home, on pets or for cultivation, herbicides and fungicides. Odds ratios (OR) and 95% confidence intervals were estimated using unconditional regression model closely adjusting for age, sex, degree of urbanization and type of housing (flat or house) of the residence. Insecticide use during pregnancy was significantly associated with childhood AL (OR=2.1 [1.7-2.5]) either lymphoblastic (OR=2.1 [1.7-2.5]) or myeloblastic (2.2 [1.4-2.4]), NHL (OR=1.8 [1.3-2.6]) mainly for Burkitt lymphoma (OR=2.8 [1.7-4.7]), mixed cell HL (OR=3.9 [1.4-11.2]) but not nodular sclerosis HL (OR=1.1 [0.7-1.9]). Associations with herbicide or fungicide use during pregnancy were less marked. Paternal household use of insecticide since conception was also related with AL (OR=1.5 [1.2-1.8]) and NHL (OR=1.5 [1.0-2.1]) but the relationships did not remain after adjustment for maternal insecticide use during pregnancy (AL: OR=1.1 [0.9-1.4]; NHL: OR=1.1 [0.7-1.7]).

In conclusion, the study findings reinforce the hypothesis that domestic use of pesticides may play a role in the etiology of childhood hematopoietic malignancies, and point out that prenatal period could be a particular vulnerable time window. Their consistency with previous studies raises the question of prevention among pregnant women.

Retrospective analysis of an outbreak of non-successful pregnancies in a community nearby a melon plantation

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Aims: The objective of this study was to identify risk factors of non-successful pregnancies in a Costa Rican community during 2004. Out of twenty pregnancies, four resulted in stillbirths, three in miscarriages and one in a congenital malformation. The community inhabitants attributed this outbreak to the pesticide use in a nearby melon plantation.

Methods: Environmental, occupational, social, genetic, and health factors were compared between the non-successful pregnancies (cases, n=8) and successful (controls, n=12). Socio-spatial data were obtained through Geographical Information System (GIS) and a questionnaire about the location and characteristics of the cases and controls houses, and the melon plantation. In addition, cases and controls were interviewed using a structured questionnaire about problems during the pregnancy, working conditions, pesticide exposure, among others. Odds ratios were estimated to identify risk factors. At present, we are interpreting the socio-spatial data.

Results: Preliminary results showed an increased risk for stillbirth (OR 1,71, 95% CI 1.06, 2.76) for parents whose direct family members suffered from hypertension. For stillbirths, increased (OR 1.5 to 3.0), but far from significant (95% CI 0.12 to 37.7) risks were observed for being conceived during periods of high pesticide use, living nearby the melon plantation and/or working at the melon plantation (one, or both parents), and pesticide use at home. For all non-successful pregnancies, increased but far from significant risks (OR 1.5 to 2.1, 95% CI 0.30 – 15.36) were observed for being conceived during periods of high pesticide use, living in the melon community, parents whose direct family members suffered from hypertension, and pesticide use at home.

Conclusions: Results from our study are non-conclusive due to small study population.

Exposure of pesticides and liver enzyme among woman and children in an agriculture community in Malaysia

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Introduction: A cross-sectional study was conducted on 89 respondents which are made up of 61 women and 28 children in an agriculture community, south of peninsular Malaysia. The objective was to determine the liver enzymes concentrations and the prevalence of health symptoms due to pesticide exposure.

Methodology: About 5 ml of blood samples were collected and the blood plasma was then analyzed using Hitachi 902 Automatic Analyzer for 3 types of liver enzyme namely Alanine Amino Transferase (ALT), Aspartate Amino Transferase (AST) and Gamma-Glutamil Transferase (GGT). ALT enzyme is used to measure liver abnormality and indicate the dysfunction of the liver. AST enzyme is associated with liver or cardiovascular diseases and used as a diagnosis for heart attack or failure. GGT enzyme is used to diagnose liver diseases including alcohol cirrhosis and primary as well as secondary cancer.

Results: Most of the herbicides used was to clear weeds in the plantation nearby the homes (75.0 %). The herbicides namely Alay (metsulfuran methyl) and Round up or Sentry (glyphosate) were mainly used about 42.7% and 50.6% respectively. Health symptoms such as headache (87.5%), cough (84.3%) and cold (79.8%) were commonly experienced by the respondents. Blood analysis showed that the mean ALT was 21.71 unit/liter (58.67% of the standard), the mean of AST was 28.87 unit/liter (96.23% of the standard) and the mean of GGT was 18.53 unit/liter (61.77% of the standard). There was a significant positive correlation between the period of residence with the AST concentrations ($r = -0.024$, $p = 0.021$). There was a significant difference for GGT ($z = 0.4135$, $p < 0.001$) as well as the ALT ($z = -2.647$, $p = 0.008$) between the women and the children. The mean AST for the children was also higher than the standard (30 unit/liter). Multiple linear regression showed that the duration of stay significantly influence only the AST ($F = 2.878$, $p = 0.028$) and the scores on exposure significantly influenced the health symptoms ($F=6.436$, $p < 0.001$).

Conclusion: Findings indicated that the children had significantly lower ALT and GGT than the women probably due to their shorter period of residency in the area. However, the mean AST enzyme in the children was higher than the normal value, Therefore, there is a tendency for these children to experience liver or cardiovascular problems in the future.

Key words: liver enzymes, pesticides use, health symptoms, children

The impact of pesticides on children's health

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The children, from prenatal period through adolescence often react differently to chemicals than the adults because, they have different exposures and behaviour patterns, metabolism, and special vulnerabilities determined also by critical time windows of development. Their systems are still developing, often making them less able than adults to metabolize, detoxify, and excrete toxins. Of particular concern are the potential effects of pesticides which are endocrine disruptors especially when exposure occurs during “critical windows of development” as well exposure to potentially oncogenic pesticides. Although pesticides in general are not considered as the major causing agents of cancer, they can nevertheless contribute to cancer risks either directly acting as promoters, activators or indirectly as agents weakened various defence mechanisms. Furthermore acute short-term exposure through food chain is of concern and recently the safety of the MRLs for certain pesticides e.g. Aldicarb for toddlers and infants was questioned at the EU level. In order to determine the acute exposure and evaluate potential risks, the deterministic model of JMPR was used. The Predicted Short Term Intake values (PSTI) values were evaluated for children of 4-6 years, from the national monitoring data of 2005 and 2006. In order to evaluate the safety of the respective EU MRLs for children, only data below or at the MRL level were used. The PSTI values were compared to the ARfD values (or ADI when no ARfD values were available). A number of cases of concern have been identified indicating clearly unacceptable risks for children and the need for re evaluation of MRLs. In the presentation an overview on children's vulnerability, exposure and related enhanced risks to exposure to pesticides as well as the results of the above study will be discussed. Furthermore relevant actions taken within the CY-Cehap to minimize exposure of children and fetuses to pesticides will be presented.

Monitoring of socioeconomic disparities in environmental exposures and children's health: Experiences from the Bavarian health monitoring units

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Starting in 2004, health monitoring units (GME) were established in three rural and three urban regions of the federal state Bavaria, Germany with a thematic focus on children's environmental health. The GME's aim is to gain current and relevant health data especially of children and to evaluate health promotion and prevention strategies. Against the background that issues of environmental justice are increasingly recognised in Germany, our objective was to assess the relationship between socioeconomic factors, built environment and children's health in urban and rural settings.

Up to now, three cross-sectional studies of children aged 5 to 7 years have been performed. Data on housing conditions, perceived exposure to noise and air pollution and annoyance by noise were obtained by parental questionnaires. As indicators of a child's socioeconomic position (SEP), relative poverty of the household, low parental education, parental unemployment and single-parent family were used.

The first survey 2004/2005 showed that children with a low SEP were more likely to be exposed to air pollutants and noise and to live in a crowded flat without accessible green space. A low SEP was positively associated with a child's bad health, obesity, and traffic accidents. Effect estimates of the association of SEP with children's health were attenuated by including indicators of environmental exposures into the regression models, thus indicating that adverse housing conditions partly explained the observed health disparities. The surveys 2005/2006 and 2006/2007 concentrated on more detailed analyses of noise exposure and health effects, taking various sound sources and in one urban region objective exposure data linked by residential address into account.

In conclusion, in both urban and rural districts socioeconomic disparities in children's built environment and environmental health were detectable. Policy measures of health promotion and of housing improvement should aim to specifically tackle these environmental inequalities.

Making the case for environmental justice in central and Eastern Europe

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Improving the policy framework for addressing environmental and human rights issues will improve children's health. Research on environmental injustice in Roma communities in Europe demonstrates this critical point by asserting a strong relationship between environment, human rights, and health.

This research is an analysis of available, accessible data on environmental conditions and human rights in Europe with an emphasis on Roma communities. The data included: scientific and academic literature, United Nations and World Bank reports, government documentation, case studies from experts, and personal interviews with local officials, representatives of non-governmental organisations and members of different Roma communities.

Environmental injustice is observed when members of ethnic minorities and lower socio-economic status, refugees, least educated persons, and other marginalized groups disproportionately: 1) suffer from exposure to environmental hazards due to their proximity to hazardous waste sites, incinerators, factories, and other sources of pollution, and/or 2) are denied environmental benefits such as water, sewage treatment facilities, sanitation, and access to natural resources. Within poor and minority populations, children and women suffer the most.

The research provides evidence that Roma communities face both greater exposure to environmental hazards and benefit less from rapidly privatising public services. For example, 15% of Romany colonies in Hungary are within one kilometre of illegal waste deposits. Only 8.5% of Roma families in Serbia and Montenegro have access to water facilities compared to 37% among non-Roma households.

The effects of this discrimination on children's health are evident. Mortality is more than twice as high among Roma infants compared with non-Roma children. Epidemics of gastrointestinal infections, Hepatitis A, and deaths due to flooding are much more common in Roma communities. When a child is sick, ambulance crews may refuse the call-out blaming difficulties in access due to unpaved roads.

Income distribution, political rights and civil liberties, and literacy rates has been shown to influence the degree of discrimination in the distribution of pollution and access to clean water and sanitation facilities. More research is needed so that national and EU authorities can develop coherent policies to combat discrimination and take advantage of what is perhaps the greatest opportunity to improve children's health and promote environmental justice in Europe.

Environment and children's health: Research activities funded by the European Commission's Research Directorate-General

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Ninety-two international multidisciplinary research projects dealing with the environment and health issues were funded by the European Commission's Environment and Health 'key action' in the Fifth Framework Programme of Research (1998-2002) with total funding of around €160M. Most of these projects have ended recently. The projects dealt with many issues pertaining to children's health: impacts (reproduction, neurodevelopment, cancer...) of environmental chemicals (endocrine disrupters, heavy metals...), air pollutants, EMF, UV light, noise etc. While the Sixth Framework Programme of Research (2002-2006) has been ongoing, the EC adopted the Environment and Health Action Plan in 2004, one of the aims of which is to understand the links between exposure to environmental stressors and health outcomes such as neurodevelopmental disorders. Implementation of the research actions under this Action Plan have resulted in the funding of a number of both specific targeted research projects as well as a few large-scale integrated projects or networks of excellence, focusing on, e.g., long-term health impacts (including children) of exposure to low levels of heavy metals. EC contribution to these projects now exceeds €200M. Research efforts to implement the Action Plan will continue in the Seventh Framework Programme of Research (2006-2013), which will have a specific activity called 'Environment and Health' under the 'Environment' theme. First calls for proposals have been launched and several topics address issues related to children's health and environment.

Towards a comparative assessment of policy actions on children's health and the environment: a case study within WHO-coordinated ENHIS project

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Objectives: The policy assessment study aims to stimulate the development of accountable EH policies through sharing and comparing national policy formulations and experiences. It moreover strengthens the policy-relevance of the Environment and Health Information System (EHIS), as the study provides an overview of national policies in children's environmental health, their monitoring and follow-up measures, as well as gaps and information needs in EH policy-making.

Methods: EH policy questionnaires were implemented under the umbrella of the WHO-coordinated ENHIS project. The questionnaire asks for national policy characteristics in the topic areas, which are structured around the CEHAPE RPG goals and encompass the areas of water, traffic, housing, outdoor and indoor air, noise, UV and radon radiation, and chemical hazards in food.

Results: Most EH topics are covered by national legislative policies. The level of policy harmonization among European member states largely depends on the coherence of the EU legislative policy framework. In most EH policy areas children are recognized as a vulnerable group, nevertheless child-specific policy actions are generally still lacking. Indicated reasons are the knowledge gap about children's susceptibility to environmental factors and lack of children's exposure monitoring.

Conclusions: It can be concluded that there is lack of guidance on implementation and follow-up of transposition policies, whereas the current policy case studies aim to get insight into this issue for less or non-harmonized EH policy topics. Overall, policy accountability in population health terms is neither defined nor evaluated with exposure reduction monitoring and health improvement measurements. Cross-sectoral co-ordination at horizontal and vertical policy levels needs to be established or improved in order to specify and evaluate national EH policies and to achieve accountable EH policy-making. This policy assessment study clearly indicates the need for EHIS, which ensures a better integration of health concerns into other policies.

Research information: Current status: EH policy case studies in progress. Expected finalization in October 2007

Acknowledgements: The presented work is a part of the ENHIS projects coordinated by WHO on implementing and establishing the environment and health information system supporting policy-making in Europe. Project coordination: Dr. Michal Krzyzanowski, World Health Organization Regional Office for Europe, European Centre for Environment and Health, Bonn, Germany Supported by DG SANCO, grant agreements SPC 2003112 and SPC 2004124

ENHIS partners and collaborating partners are acknowledged for their contribution to questionnaire implementation, authorship and critical review of the first comparative policy assessment report.

On development of the State children's environmental health action plan of the Kyrgyz republic

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To implement the European strategy for children's environmental health the Kyrgyz Republic has undertaken the obligation to develop the National Profile with subsequent development of the State Children's Environment and Health Action Plan of the Kyrgyz Republic. The assessment of the current state of children's health and environment has been carried out in collaboration with different ministries.

The draft State Plan includes activities in the area of protection of children's health and environment, i.e. improving the legislative base; implementation of national plans on children's health protection and improvement; organization of nutrition in pre-schools and schools; optimization of the educational environment in child institutions; improvement and implementation of educational programmes in the field of healthy lifestyle and environmental protection; conducting research on the effect of environmental conditions on children's health; increasing the awareness of the population and active community involvement.

The following regional priority goals (RPG) were established: RPG1 – prevention of acute enteric diseases, safe water and sanitation; RPG2 – prevention of children's injuries and physical development of children as well as prevention of micronutrient deficiency. RPG3 deals with tobacco use prevention among children. The plan also includes a special task of intensifying activities regarding work with local communities for improving children's environment and health. The important pre-conditions for implementing the State Plan are: increasing political will towards improving children's environment and health, increasing inter-sectoral collaboration and communication, expanding community participation, improving legislation in the field of children's environment and public health as well as adequate funding and technical assistance.

Reducing toxic threats to child development: the learning and developmental disabilities initiative

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Exposures to neurotoxicants, such as lead, mercury, pesticides, polychlorinated biphenyls (PCBs), and solvents can have a detrimental impact on brain function and in turn lead to learning and developmental disabilities. More and more children are being exposed to these heavy metals and chemicals from the gold mines of Malaysia to the dumping grounds of used electronic goods in China to the pesticide-laden crops in the U.S. and Mexico. This means more children will likely not reach their full potential cognitively and instead may suffer from intellectual disabilities and behavioral problems, costing their families and societies emotionally and financially.

In the U.S., LDDs appear to be on the rise, affecting at least one in six children under the age of 18. New research reveals that exposures to certain neurotoxicants are likely contributing these increases, starting during fetal development. To date, most learning and developmental disability (LDD) groups have focused on identifying affected kids and getting them the services they need—something that is, of course, very important. However, under the auspices of the Collaborative on Health and the Environment (CHE), a new work group, the Learning and Developmental Disabilities Initiative (LDDI), was formed in April 2002 to galvanize national and regional LDD groups interested in looking upstream and focusing on the prevention of exposures to neurotoxicants.

Now over 350 organizations and individuals have joined LDDI, including a number of the major national LDD organizations. With memberships totaling well over 500,000, these organizations are now educating their constituencies and becoming a strong national political voice to reduce exposures to neurotoxicants. This presentation will outline some of the latest science on the links between environmental exposures and LDDs as well as educational and policy efforts in the U.S. that might serve as effective models in other regions and countries.

Posters

Air pollution and impact on human health (7 districts, during 2001-2004)

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Introduction: During the last decade in our country as result of the free movement of the population, progress and growth of the industrial activities, increase of the vehicle number, destruction of the road infrastructure etc, it seems a relevant increase of the air pollution which has affected the increase of the respiratory/cardiovascular diseases.

Goal: The evaluation of the urban air pollution levels and the impact on the health of the population.

Materials and methodology: The data that are used in this study include:

1. The growth in percentage of vehicles number.
2. The annual levels of the pollution indicators: LGS & PM10.
3. The pulmonary diseases (hospital cases): bronchial asthma, chronic bronchitis and pulmonary Ca. The method of study is a descriptive one.

Results and discussion: In the table below is presented the growth of vehicles number in percentage and the growth of indicators such as LGS and PM10 in times, during the period 2001-2004:

The City	Number of vehicles in %	LGS indicator (in times)	PM10 indicator (in times)
<i>Tirana</i>	28.8	4.8	4.1
<i>Elbasan</i>	28.3	4.6	3.36
<i>Durres</i>	26.5	2.6	2.1
<i>Fier</i>	21.1	2.5	1.98
<i>Vlore</i>	22.0	2.0	1.4
<i>Korce</i>	29.4	1.7	1.54
<i>Shkoder</i>	12.4	2.4	2.2

The prevalence of bronchial asthma, chronic bronchitis and pulmonary Ca (cases/10.000 habitants) during the 2001-2004 has been:

The city	Bronchial asthma	Chronic bronchitis	Pulmonary Ca
<i>Tirana</i>	3.41-12.9	3.31-6.19	2.1-3.48
<i>Elbasan</i>	3.97-5.53	0.59-3.48	0.32-0.14
<i>Durres</i>	2.15-7.1	2.81-1.35	0.28-0.09
<i>Fier</i>	5.78-10.1	2.06-3.32	0.5-0.95
<i>Vlora</i>	11-16.4	6.9-10.5	0.1-0.15
<i>Korce</i>	13.2-13.9	11.7-12.8	3.9-3.3
<i>Shkoder</i>	3.78-7.44	5.4-7.98	1.31-1.16

There is an evident increase of the pollution and diseases indicators.

Recommendations:

1. Improvement of the quality of monitoring process for the urban air and the inclusion in the monitoring process of the rural areas, especially the enterprises located near the inhabited areas.
2. Setting-up of the surveillance system on the interest diseases data.
3. Need of the inter institutional cooperation on the data reports.

Analyses of factors responsible for children urine tract disease in Tajikistan

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Prevalence of pediatric urine tract disease among the children in different parts of the world varies from 12 to 54 per 1000. It was found that for some separate cases quantity of illnesses shows positive correlation with different variable parameters like environmental pollution, climate, geographical location, and maternal health state.

According to our investigation in several regions in Tajikistan, we detected extremely high outbreaks of children organs of urine tract diseases, which many times exceeds world's index. For example, on the east of Tajikistan in Tursun-zade district this data is 94, 7 illnesses per 1000. On the northern part in Khujand city this figure was recorded as 72.6/1000. In Dushanbe, the capital city of Tajikistan, and several southern regions it exhibited result was 54/1000. These data are comparable with level of the illness world index.

As the matter of fact we conducted several investigations to determine factors responsible for catastrophic state of this type of illnesses in Tajikistan

The investigation had 3 stages and was conducted on the National Children Nephrology Centre where 8087 diseased at age of 14 were observed.

Results revealed that main cause of bulk disease of pediatric urine tract in Tajikistan are growth in metabolism pathology, genetic factors generated by the great amount of marriages between relatives, poorly organized medical-genetic services, lack of knowledge in area of medical genetics by the majority of physicians, and insufficient level of public awareness of opportunities in medical-genetic consultation.

Analysis of malignant neoplasm morbidity in children

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The aim of this study was to carry out analysis of oncological morbidity in children of urbanized areas. To assess the neoplasm morbidity in children of the city Bishkek, Kyrgyz Republic, data were collected from medical records of the National Center of Oncology on notifications of newly diagnosed cases of cancer or other malignant neoplasms for 10 years (1994-2003). This work was supported by SCOPES JRP# IB7310-110915.

Malignant neoplasm data were analyzed by gender, age, nationality, city's administrative territory and according to ICD-10. There were 125 reported cases among children aged 0 to 14 years, including 79 boys (63.2%) and 46 girls (36.8%). The age distribution of neoplasm cases was as follows: 39.2% for ages 5-9 years, 36.8% for 0-4 years, 23% for 10-14 years. By nationality the Kyrgyz made up more than half of cases – 54.4%, followed by 36.8% Russians, 4% Koreans, 4.8% other nationalities. The highest rate of neoplasms was found in Leninsky rayon – 37.6% followed by 25.6% each in Oktyabrsky and Sverdlovsky rayons, 11.2% in Pervomaysky rayon. In the structure of neoplasms, the proportion of C81-C96 neoplasms (malignant neoplasms, stated or presumed to be primary, of lymphoid, hemopoetic and other related tissues) was 51.2%, followed by C69-C72 (malignant neoplasms of eye, brain and other parts of central nervous system) – 16%; C45-C49 (malignant neoplasms of mesothelial and soft tissues) – 8%, other classes – 24.8%. Among Bishkek children the rate of neoplasms was higher in boys than girls. Malignant neoplasms were more frequent in children aged 5-9 years, and children of Kyrgyz nationality. The rates of neoplasms were higher in the north-western part of the city (Leninsky rayon) which may be related to the presence of a large number of environmental pollution sources and the wind rose. In the structure of malignant neoplasms the highest proportion was for C81-C96.

Antibodies to Haemophilus influenzae type b capsular polysaccharide in immunized and non-immunized Vietnamese infants

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Objective: To evaluate the responses to two Haemophilus influenzae type b (Hib) conjugate vaccines in young Vietnamese infants and compare the antibody levels obtained with those acquired naturally in an age matched group of infants receiving Hepatitis b vaccine.

Methods: The method applied in this study is a clinical trial consisting of both description and analysis of data collection by using medical statistical tests. Subjects selected into study lots are healthy 2 months infants who were born in families residing in Long Hau and Phuoc Lai communes, Can Giuoc district, Long An province. Study infants were randomly assigned to receive HibCP-TT, HibCP-OM or hepatitis b vaccines at 2, 3 and 4 months. Infants given Hib conjugate vaccine received a booster dose at 9 months. All infants also received diphtheria-tetanus-whole cell pertussis vaccine and oral polio vaccine at 2, 3 and 4 months and measles vaccine at 9 months. Serum was obtained at 2, 5 and 10 months and assayed in ELISA.

Brief summary of results: Fifty-seven infants received HibCP-TT, 57 received HibCP-OM and 51 hepatitis b vaccine. There were no differences between the HibCP antibody concentration before immunization among the groups ($p=0.4$), and no differences between the responses to the two Hib conjugate vaccines neither after three ($p=0.58$) nor after four ($p=0.76$) immunizations. At 10 months after the fourth immunization 96 and 93% of the infants in the Hib vaccine groups had antibody concentrations ≥ 1 microgram/ml. In the hepatitis b vaccine group the infants had much lower HibCP antibody levels at both 5 and 10 months ($p<0.00005$). However, there was a slight increase in HibCP antibodies from 2 to 5 months ($p=0.15$), and a further increase from 5 to 10 months ($p=0.018$). At the age of 10 months 98% of the infants in this group had HibCP antibody concentrations ≥ 0.15 microgram/ml.

Conclusion: The two Hib conjugate vaccines tested here are highly immunogenic among Vietnamese infants, and can therefore be expected to confer protection against invasive Hib disease if implemented in the Vietnamese routine immunization program. However, the early natural development of HibCP antibodies among Vietnamese infants as found in the control group, who received hepatitis b vaccine, suggests that in Vietnam it might be possible to protect infants from invasive Hib disease with fewer vaccine doses than are needed among Western infants.

Assessing pediatric asthma occurrence: a comparison between an electronic drug database and screening questionnaires

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Owing to the variable nature of asthma, its ascertainment is not straightforward. The study served as a pilot experience to assess asthma prevalence from different databases in a north-eastern Italian area (Rovigo, Veneto) with some energy producing plants.

Asthma prevalence was assessed by anti-asthmatic medicine prescriptions and compared to results from screening questionnaires, for a resident population aged 6,7 and 13 years. A group of medicines, capable to indicate asthma cases, were used to classify asthma severity according to the frequency of dispensed drugs between 2000 and 2003. A merging database was created in order to compare the agreement of the two approaches by considering the questionnaire as a gold standard. The unique health code was used for record linkage.

The prevalence from questionnaire was 5.9%, lower compared to questionnaire-based reference studies applying the same instrument, which report a prevalence of around 9%. Whereas prevalence of intermittent or persistent medication was 14.6%, and 5.9% considering only the persistent anti-asthmatic consumption.

Agreement of the two approaches varied according to prescription frequency. The best classification group is based on intermittent or persistent medicine consumption (ROC-curve: Area Under Curve = 0.66).

The data imply that prevalence measured by drug use is higher compared to the one obtained by questionnaire or reference studies. In order to routinely investigate spatial and temporal trends, further research is required to obtain a pharmacy-based classification system able to identify asthma cases, likewise the inclusion of other sources (e.g. hospitalisation data) could improve case identification. Consequently drug databases would be valuable for health research, allowing an easy, economic and quick assessment of incident and prevalent cases. Furthermore, there is the potentiality of a population-based surveillance system, which would be particularly apt to assess acute response to air pollution, and thus could be a suitable tool for policy making.

Atopic status of pregnant women in relation to the type of environment in Slovakia

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Introduction: Striking differences in the prevalence of atopic diseases among countries and within the same country were reported. We enrolled a group of pregnant women from environmentally different regions of Slovakia and evaluated their atopic status.

Aims: Within the framework of EU project PLUTOCRACY a comparison of asthma symptoms, allergic rhinitis, atopic eczema and allergic sensitization were examined in participants in Slovakia.

Brief summary of the content: Questionnaires focused on asthma symptoms, allergic rhinitis and atopic eczema were administered to enrolled pregnant women. Detection of total IgE was done by ELISA method and for detection of specific IgE a Pharmacia CAP System™ Phadiatop FEIA technique was used.

Statistically significant differences in asthma frequency were found between rural region Stara Lubovna (SL) and urban region Bratislava (BA), ($p=0,046$) with higher prevalence of asthma symptoms in BA (14.3% in SL vs. 23.7% in BA). Symptoms of allergic rhinitis were 16,9% in SL and 33,9% in BA ($p=0.001$). Symptoms of eczema were 14,9% in SL and 27,1% in BA ($p=0.013$). Number of positive samples for allergen specific IgE against inhalant allergens were 18.2% in SL and 33,1% in BA ($p<0.001$).

Conclusions: Significant differences in allergy symptoms and rate of sensitization to inhalant allergens among pregnant women from 2 selected environmentally different regions of Slovakia were found. Symptoms of asthma and allergic rhinitis followed the sensitization rate.

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Bacteriophages may become useful preparation for pediatric medicine

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Objectives of the research: Identification of alternative preparations to antibiotic resistant bacteria in paediatric medicine

Brief summary of the content: The increasing use of antibiotics in children led to a public health crisis in antibiotic resistance.

Bacteriophages may provide us with a renewable resource of smart preparations for treating bacterial diseases.

Bacteriophages (phages) are viruses which infect bacteria. In terms of size, structure, morphology and composition they closely resemble human viruses.

Since bacteria became resistant to antibiotics an interest towards bacteriophages has re-established.

Bacteriophages may provide us with a renewable resource of smart preparations for treating bacterial diseases.”

Bacteriophages were widely used in Soviet Medicine and are still used in Georgia.

In 1923 George Eliava established the Institute of Bacteriophages in Tbilisi under the Commissariat of Health Protection of Georgia.

Application to bacteriophages in Georgia were made during different years.

Children who receive antibiotics within the first six months of life increase their risk of developing by age seven allergies to pets, ragweed, grass and dust mites and asthma.

The problem is a serious one, since nearly half of all children receive antibiotics before they reach their seventh birthday – making them two-and-a-half times as likely to have asthma, and one-and-a-half times as likely to have allergies.

Researchers also found that if a child is breast-feeding, the mother’s history of allergies adds to the risks of allergy for a child taking antibiotics.

The increasing use of antibiotics in children from 1977 to the early 1990s led to what federal health officials called a public health crisis in antibiotic resistance.

Only specific bacteriophages were used in association with several types of surgical procedure.

The technique of treatment is described. In 129 (93.5%) cases the results were good in 9 (6.5%) cases local improvement was observed. It is concluded that bacteriophage therapy may be helpful in the treatment of long-term suppurative infections.

The introduction of bacteriophages may lead to a unique approach against pathogens.

Biological monitoring of exposure to pesticides of members of families working in agriculture and their children -preliminary results

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Introduction: Pesticides have a significant public health benefit by increasing food production productivity and decreasing diseases. On the other hand, public concern has been raised about the potential health effects of the exposure to pesticides.

Objectives: The objective of the study was to assess the exposure to selected pesticides of member of families working in agriculture and their children.

Methods: Exposure assessments were conducted in Lodz district (Central Poland). A total of 25 families and their children were recruited to participate in the study. The exposure assessment methods were used to estimate mothers', fathers' and their children exposure to two most often used pesticides in this area: MCPA and 2,4-D.

Patches were used by the person who performed spraying during the whole process of pesticide spraying. Saliva and urine samples were collected from mothers, fathers, and children. To estimate the potential environmental exposure to pesticides a dust sample from home's window was also taken after spraying session.

Results: Both pesticides were found in 100% of patches samples provided by spraying person and in the 80% of samples taken from home window for 2,4-D and in 74% of window samples for MCPA.

2,4-D were detected in 60% of urine samples in children, in 60% of mothers' and in 100% of fathers' urine samples collected in the evening. In saliva 2,4-D were detected in 20% in children, 20% in mothers' and in 40% of fathers' evening samples.

MCPA were detected in 16% of urine samples in children, 37% in mothers' and 95% in fathers' urine samples collected in the evening. MCPA were also detected in saliva samples of 11% children, 26% mothers and 68% fathers collected in the evening.

Samples of urine and saliva of mothers, fathers and children collected on the next morning followed similar pattern.

Conclusion: The data provide an evidence of existing exposure of children and their families to pesticides.

Sputum samples usually were more sensitive for detection of exposure than urine ones. Measures to minimize exposure to pesticides of applicators and members of their families should be more effectively applied.

Blood lead levels and onset of puberty in Russian boys, Chapaevsk, Samara region

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Objectives: The purpose of this research was to investigate the association between blood lead levels with the onset of puberty in boys from Chapaevsk, located in central Russia, Samara region. The town has several large industries that previously manufactured chemical warfare agents, industrial and agricultural chemicals. These processes have resulted in environmental contamination with dioxins and metals.

Methods: We explored the association of blood lead levels with pubertal onset among 489 eight- to nine-years old boys from Chapaevsk, Russia. A trained physician performed physical examinations to assess Tanner stage and testicular volume. Logistic regression models were used to evaluate the association between log-transformed blood lead levels, and between high blood lead (≥ 5 $\mu\text{g/dL}$) versus lower, with onset of puberty based on testicular volume $>3\text{ml}$ or Tanner stage 2 or higher for Genitalia (G2) or Pubarche (P2).

Results: The median (25th, 75th percentile) blood lead level was 3 $\mu\text{g/dL}$ (2 $\mu\text{g/dL}$, 5 $\mu\text{g/dL}$). Twenty-eight percent of boys had blood lead levels of 5 $\mu\text{g/dL}$ or greater, with 3% above 10 $\mu\text{g/dL}$. Height, weight, BMI, birth weight and gestational age were predictive of the onset of puberty as assessed by either testicular volume (greater than 3 ml) or Genitalia Stage (G2). Blood lead was inversely associated with height ($P < 0.0001$) and weight ($P = 0.06$) after adjustment for birth weight, gestational age, and age at examination. Boys with blood lead levels of 5 $\mu\text{g/dL}$ or higher had a 44% reduced odds of having entered G2 as compared to those with levels less than 5 $\mu\text{g/dL}$ (OR=0.56; 95%CI: 0.34-0.94, $p=0.03$). The odds of being in P2 or having a testicular volume greater than 3 ml were non-significantly decreased for those with blood lead levels of 5 $\mu\text{g/dL}$ or higher.

Conclusions: Relatively low environmental blood lead levels were associated with lack of pubertal onset in peri-adolescent Russian boys.

Blood lead levels in anaemic children living in Siauliai district of Lithuania

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The objective of this study was to determine blood lead levels in anaemic infants and toddlers and to evaluate factors associated with blood lead level (BLL).

Methods: The questionnaire based data (14 items), BLL and haemoglobin (Hb) concentration, red blood cell indices (MCV, MCH, MCHC, RDW) and S-ferritin were determined in 44 children living in a highly industrialised city and vicinities of Siauliai district.

Results: There were 44 anaemic (Hb<120 g/L) children participating in this study aged from 9 to 40 months (mean age (SD) 18.61 (8.20), boys 19.50 (8.80), girls 17.55 (7.50) months) with predominance (63 %) of children from 12 to 24 months.

The mean (SD, Min – Max) BLL was 1.92 µg/dL (1.15; 0.14 - 4.72 µg/dL). The 25, 50 and 75 percentiles for BLL were 0.95, 1.74 and 2.86 µg/dL, respectively. The girls (N=20) were tended to have higher BLL of 2.11 µg/dL (1.22; 0.55 – 4.72 µg/dL) than boys (N=24) did – 1.76 µg/dL (1.08; 0.41 – 4.19 µg/dL). We detected higher ($p>0.05$) mean (SD, Min - Max) BLL in summer 2.09 µg/dL (1.31; 0.78 – 4.72 µg/dL) and autumn 2.16 µg/dL (1.15; 0.56 – 4.19 µg/dL) than spring 1.6 µg/dL (0.99; 0.41 – 3.74 µg/dL).

We found significant correlations between BLL and MCV -0.402, BLL and MCH -0.402, BLL and MCHC -0.348, BLL and RDW +0.494, $p<0.05$. The correlations between BLL and S-ferritin and Hb were not strong: -0.155, BLL and Hb -0.218, $p>0.05$. Iron depleted babies with S-ferritin <12 ng/mL had a higher mean BLL than did not-iron depleted children (2.16 vs. 1.74 µg/dL, $p>0.05$).

The higher than 3 µg/dL BLL were significantly associated with microcytosis (MCV<70 fl), consumption of tea >500 mL/day, good appetite and living outside industrial Siauliai city, $p<0.05$. Other factors were autumn season, female sex, children born from 2nd or later delivery, consumption of milk more than 500 mL/day, living near busy street, using pottery for cooking and pica, $p>0.05$.

Conclusions: Our data suggest that microcytosis and hypochromia, indices of iron deficiency anaemia, is associated with higher (>2 µg/dL) BLL, which is still much below acceptable (10 µg/dL) blood lead levels in children.

Petrochemicals environmental polluted & health impacts in district Fier. (Albania)

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Background:

The region is known for the oil and gas industri contributing most of the country' production. Three of nine environmental hot – spots identified by UNEP are located in FIER Region, i.e. Patos-Marinza oilfield. Oil refinery of Ballsh and nitrate fertilizer plant in Fier. All these old- technologies industries are lacking the necessary to contain the emission of noxious gas or oil in the surrounding environment.....

Aid of study:

The study aimed to evaluate the levels of pollutants in the environment (air, soil, water) and the vulnerability of the citizens to diseases caused by pollutants; to intervene in order to reduce the pollution as well as to improve the wellbeing and health of the people

Methods:

Were monitored air, water and soil petroleum polluted, the levels of pollutants in blood and urine, chronic and professional diseases, morbidity and mortality of population...

Results:

The concentration of air, water, soil pollutants are not stable as a result of industrial petroleum activities and hydro-metrology changing time...

Conclusions:

Now the main source of air, water and soil pollution is Industrial petroleum activities, the tendency is mostly in the larger zones of petroleum fields (an increase of air pollution by sulfur dioxide (H₂S), Hydrocarbons), water and soil are polluted by petroleum.

The health situation of this population is:

- Respiratory diseases, cardiovascular diseases, endocrine diseases, blood diseases, cancer diseases, etc.

- The average death rate of the population is low and the principle factors are cardiovascular diseases, cancer, respirator diseases, accidents, etc...

Change in legislation and the impact on toluene sniffing in Chilean children

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A study was made to evaluate the impact of the prohibition to use toluene in contact adhesives in the Chilean population sniffing patterns. Toluene is the main drug used by people with solvent addiction across all social classes with tragic consequences in children of low social classes or that live in the street. The toxic effects of toluene are basically narcosis, muscular weakness, anorexia, renal and hepatic damage and peripheral and central neuropathy. Approximately 50% of an inhaled dose is absorbed. The changes in legislation were implemented in 1992. Epidemiological studies done in Chile in 1989 detected a high rate of use of volatile solvents in young people with about 60,000 users, which represented a 7% of all the substances consumed capable to cause dependence. When these numbers were released to the public opinion, a commotion was caused due to the great damage that toluene could produce to the health of children. This ensued a campaign to substitute toluene in several products, campaign that saw participation from the CITUC (Catholic University Poison Center), the Ministry of Health and the main manufacturer of this type of adhesives in Chile. Due to this campaign, the Ministry of Health ordered a decree in 1998 to forbid the use of toluene in adhesives of school use, in a second stage toluene was forbidden in adhesives of industrial use and in toys and articles directed to children. As a consequence of this change, a study done in 2000 to study the use of abuse substances showed that solvents only represented 1% compared to other substances and in the year 2004 only 0,15% according to CONACE (National Council for the Control of Stupefacients).

Children's environment and health in Ecuador: four examples

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CHILDREN AT SCHOOL EXPOSED TO EMISSIONS FROM A REFINERY: A study in five schools in Esmeraldas, Ecuador, was carried out. Children from 1st and 2nd degree were interviewed and urine samples were collected. Those schools are a different distance from the refinery. Emissions from this refinery were measured some times showing the presence of aromatic hydrocarbons, heavy metals and dust all around it. Children from Schools closer to the refinery showed higher level of nickel in urine than those from other schools. This exposure is important due the possible chronic effects for children. Preventive measurements are needed to avoid exposure to children and monitoring is important to check emissions from this refinery.

POVERTY AND OTHER RISK FACTORS FOR ASTHMA AND SIBILANCIAS AMONG AFROECUADORIAN CHILDREN: It is an important discussion about the influence of socio-economic factors in the presence of asthma. Also the presence of environmental risks and ethnical factors are considered. In Esmeraldas it is a refinery and around it there are many schools. Most of the students are afro - ecuadorian children. A sample of approximately 1500 students was studied. The ISAAC Questionnaire was used with the parents of the students. 1170 questionnaires were fulfilled, that is 78.6% of the whole sample. A high prevalence of lifetime asthma (25.0%), any wheeze in the past 12 months (36.6%) and dyspnea with wheeze (17.9%) was identified. There was an inverse and significant association between family income and most of the respiratory items. Some factors like humidity, houses made of cane, and presence of cockroach appeared to be associated with asthma and wheeze. Poverty seems to be determinant in the asthma prevalence in this situation.

CHILDREN AT WORK AS AN IMPORTANT RISK FOR HEALTH: Two surveys were done in children at work in the construction industry and banana plantations. In the construction industry, children were exposed to the same risk factors than adults and overload, exposure to solvents, dust and other chemicals were common among them. Bad safety conditions lead to an important level of work accidents. Work accidents were four folds higher in children than in adults. In the banana plantations a large number of children are working under precarious working conditions. Those children works in the same activities than adults and are heavily exposed to pesticides. These pesticides are spread by airplanes and also with backpacks. It was estimated that more than 60.000 children under 18 years old have been working in this conditions. Both examples showed that children at work is a particular condition of environmental risks to children in Ecuador, also associated with poverty, absenteeism at school and other social contradictions.

CHILDREN AT SCHOOL EXPOSED TO PESTICIDES FROM A FLOWER PLANTATION: Students of a College situated beside a flower plantation in Cotopaxi, Ecuador, started with symptoms and signs of pesticide exposure. A study was done among this students and compared with a control group from other similar college isolated from flower plantations. Soil and dust samples collected between the school and the plantation and in the classroom and demonstrated the presence of pesticides. Initial results indicates that Acetyl cholinesterase was more inhibited, some neurobehavioral tests showed lower performance and symptoms and signs were more frequently associated with the exposed compared with the non exposed group. Further analysis are needed to go in deep in some other health effects. Preventive measurements like to separate greenhouses from the school, to build a green curtain between the school and the plantation, and to do not spread pesticides during school activities were recommended.

Climate change impact on children's health in Armenia

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The present research has been conducted by a scientific expert-group in the framework of the UNDP/GEF "Preparation of Armenia's First National Communication" Project. The results of the research have been promulgated to the general population by the NGO during different trainings, seminars and round tables.

According to this research, climate change has created a number of negative impacts on the health of the population, particularly children, in the Republic of Armenia. The sever droughts of the last 2-3 years have resulted in inconsiderable loss of water balance in the rivers and the air temperature creating severe consequences for health, such as malaria, leishmaniasis, plague, cholera, diseases of cardio-vascular system, respiratory problems, parasitic diseases, helminthes etc. In the case of the expected climate change and weakened adaptation mechanisms, increase of cardiovascular diseases, especially among the most vulnerable part of population, children and elderly, is still projected. Expansion of the areals of microbe carriers and increase of epidemic danger of malaria is also expected. The malaria as widely spread infectious disease was completely eliminated in Armenia in 1953. However, it is very sad to note that nowadays we have approximately 200 cases of malaria per year and children are most affected ones. According to the forecast there could be an aggravation of epidemic situation for cholera. We have also predicted an increase of intestinal diseases as a result of the longer duration of the period with optimum temperatures for reproduction and development of causative agents in soil and water. The adaptation includes a complex of social, sanitary, preventive and administrative measures. The previous sanitary hygienic services are weakened, particularly in rural areas, after the collapse of the former Soviet Union, and nowadays population must more rely on preventive measures. That is why the awareness raising and education of population is an urgent problem in the country and the NGO is trying to address it particularly for protecting the health of the children.

Preferred format of presentation: poster presentation, with demonstration of relevant maps, schemes, photos and a film on climate change (approx. 15 minues).

Current status of BFHI in Bangladesh and future challenges

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What is BFHI: The BFHI is a global effort to promote breastfeeding by ensuring that all women are provided with sound information regarding their infant feeding choices and that those who elect to breastfeed their infants are given sound, evidence-based advice and skilled assistance pre-natally and they begin nursing their infants during their post-partum hospital or birth center stay. The initiative is based on ten policies or the Ten Steps.

Maintenance of Baby Friendly status depends on the monitoring and evaluation of the local hospital BFHI Committee. Besides, the establishment of Lactation Management Centre (LMC) in each BFHI is a pre-condition to maintain the BFHI status. BBF provided technical supports in terms of training, supply BCC materials, training and monitoring for doctors and nurses, logistic supplies to set up LMCs in different Medical colleges.

Till February 2007, 498 hospitals of Bangladesh have been transformed to baby friendly hospital initiative (BFHI) in Bangladesh.

Current status of BFHI in Bangladesh: Bangladesh has also joined in the global movement of BFHI, Bangladesh Breastfeeding Foundation (BBF) and other organizations are playing the role of national focal point to coordinate all the activities relating to the implementation of the BFHI. The process started in 1992 with 8 hospitals. The target for 1996-2007 periods was set to 650 hospitals or health facilities.

The obstacles/challenges of BFHI in Bangladesh: The obstacles/challenges of BFHI in Bangladesh are to maintain and improve the baby friendly functional status of these health facilities. It can be summarized as follows:

- Aggressive sales promotion of BMS producers/importers in the BFHI
- Ayahs and ward boys are the source of misinformation to neo-nat mothers and their guardians
- Not all pregnant and post-natal mothers are covered by breastfeeding education
- Frequent transfer/change of trained staff
- Lack of adequate supervision by obstetric consultants and staff nurses during the first 3 days of delivery
- Inadequate assistance provided to give practical support to postnatal mothers for initiating breastfeeding
- Inadequate follow up mothers with breastfeeding problems
- No effective BFHI committee to monitor and implement 10 steps and breastfeeding policy, besides designated staff members have apathy in sending reports properly
- Lack of coordination between pediatricians and obstetricians in a hospital
- Inadequate staff to give practical support to postnatal mothers to initiate breastfeeding

Cytochrome P450IA1 polymorphisms along with PM10 exposure contribute to the risk of birth weight reduction in 1st trimester of pregnancy

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Objective of the research: The cytochrome P450IA1 (CYP1A1) has been known as a good candidate susceptibility gene for low birth weight, along with environmental risk factors. We explored the effects of particulate matter less than 10 μ m (PM10) exposure along with CYP1A1-Mspl(T6235C) and -Ncol(Ile462Val) variant types on reduced birth weight.

Brief summary of the content: A prospective cohort study was done with women who delivered from 2001 to 2004 at Ewha Womans University hospital in Seoul, Korea. For a total of 199 individuals, we compared the estimated least squares means of infant's birth weight in generalized linear model, after adjusting for infant's sex, maternal age, maternal and paternal education, parity, presence of illness during pregnancy, delivery month and gestational age.

High PM10 exposure at 90th percentile level and above during the 1st trimester conferred a significant risk for reduced birth weight, compared with low PM10 exposure below 90th percentile level (p-value=0.009). The effect of high PM10 exposure (\geq 90th percentile) during the 1st trimester of pregnancy compared with low PM10 exposure (<90th percentile) was greater for women with Mspl TC/CC and Ncol IleVal/ValVal variant types (p-value=0.018) than for those with Mspl TT and Ncol Ilelle variant types (p-value>0.05). In addition, the risk for reduced birth weight was significantly higher for women carrying Mspl TC/CC and Ncol IleVal/ValVal variant types along with high PM10 exposure than for those carrying Mspl TT and Ncol Ilelle variant types along with low PM10 exposure (p-value=0.004).

Conclusions: High PM10 exposure during the 1st trimester increased the risk for reduced birth weight in concert with Mspl TC/CC and Ncol IleVal/ValVal variant types, so the 1st trimester is a critical window of PM10 Exposure as a risk for birth weight reduction in Korean women.

Keywords: CYP1A1, birth weight, PM10

Acknowledgments: This study was supported by the Ministry of Environment, Republic of Korea (Eco-technopia, 2007, 09001-0032-0).

Detection and management of lead poisoning in children

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Introduction: Lead intoxication has serious aftermaths on children's psychomotor development. An increase in lead blood levels over 100µg/l (0,48µmol/l) is associated with a decrease in the intelligence quotient (IQ) of 1-5 points. Lead absorption is significantly greater in children than adults (40-55%) and its toxicity is more severe with co-existing iron, vitamin D and calcium deficiencies.

Material and Methods: The study group was made of 50 children from Pantelimon village, close to the industrial area of Neferal, while another 53 children from Bucharest (sectors 2, 4, 5), aging from 6 to 10 years old, formed the control group.

The assessment of children's health status was accomplished throughout clinical and laboratory findings (heavy metals' blood levels). Environmental surveys were set out in order to locate the pollution sources as well as measurements of lead concentration from air and soil samples.

Results and Discussions: The clinical examination encountered the following symptoms: fatigue, anorexia, gastrointestinal disorders, abdominal pain, sleeping disorders, paleness, learning disabilities. Paradoxically, blood samples showed increased serum levels for lead, aluminum, mercury in both the study group and the control group.

Conclusions:

1) It seems appropriate to initiate screening programs for children with increased lead blood levels (over 100µg/l).

2) Moreover, an investigation of environmental lead sources is necessary in order to stop lead poisoning and prevent an outbreak of saturnism.

3) Children should receive a balanced nutrition in order to prevent iron and calcium deficiencies.

4) School physicians should provide information concerning children with learning disabilities, presumably caused by a chronic lead intoxication.

Effects of urban and rural environment on children's health in Hungary

Adapting of a questionnaire on "draw-and-write" technique

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Environmental factors have a great role in health and health related quality of life. Naturally, the differences between urban and rural environment can influence living conditions and lifestyle, and its consequences may be already realized in the very early years of the lifetime. Our study aims to present how children define environmental risk factors of their health and health behavior.

The main objectives of the research are to answer to these questions:

- How can the housing estates influence the children's health behavior?
- Is it possible to prove the priority role of the environment in children's opinion about illnesses and diseases?
- Which are the risk and harmful factors for children's healthy life in urban and rural environment?

The special questionnaire - 'draw-and-write' - was used as a research method in order to help the children avoid the clichés and freely express their views. This technique has been adapted to the age of children to describe how 9 to 11 year-old primary school children can explore the relation between environmental factors and typical illnesses and/or psychosomatic symptoms. The children had to answer open-ended questions by drawing and describing their responses.

The data were collected from six primary schools, which were chosen according to different urban and rural residential situations such as blocks of flats in the capital, small town, and suburban areas.

In conclusion, the connection between environment and health behavior or risk behavior depends on the quality of the environment. The ideal environment in pupils' opinion connects to the facilities of sport activities or the elements -- like housing estates -- of the environment. Finally, the highlight of our study is to discover that students at this age can already make difference between the effects of social and natural environment. While the natural environment tends to appear as a "healthy area" in their opinion, the effects of the social environment were connected with different symptoms and diseases.

The study is supported by OTKA (PF63859).

Epidemiology and determinants of bicycle injuries in adolescents

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Objective: The aim of our study was to investigate the frequency and determinants of bike injuries in adolescents, focusing especially on the effect of the socio-economic status (SES) of the family.

Methods: A questionnaire based country-wide representative survey of 11-17 year children (as the part of the Health Behaviour of School-aged Children Study) was performed (N=5450), and the database of the Hungarian Central Statistical Office (CSO) have been used. From the HBSC study the data of medically treated, non-fatal bike injuries at any location in one year (04.2005-03.2006), and from the CSO database roadway bike accidents reported by the police were analysed. The SES of the fathers was applied, considering their educational level and occupation. To evaluate parental overprotection items on Parental Bonding Instrument (PBI) were and deviance scores were determined by the items on Child Behaviour Check List (CBCL) Deviance Scale. SPSS 14.0 was used for statistical analyses. Binary logistic regression has been applied.

Results: 271 medically treated bike accidents had happened (8,0%). The morbidity was 11,6% for boys, and 4,7% for girls. The younger the children were, the greater their risk they had for injury. Determinants of bicycle accident were gender (OR:0,36 95%CI:0,26-0,49); age (OR:0,29, 95%CI:0,18-0,48 11 vs. 17 years); SES (OR:2,10, 95%CI:1,33-3,28 low vs. high SES); type of settlement (OR:0,53 95%CI:0,33-0,87 village vs. capital), overprotection by father (OR:1,12 95%CI:1,01-1,24) and deviance score (OR:1,09 95%CI:1,02-1,16). Using the other data source (CSO statistic) in 2005 in the whole country 383 bicycle accident happened in the same age group, at which 292 caused mild and 91 serious (more than 8 days recovery) damage.

Conclusion: Lower SES level of the father is a risk factor for being injured on bicycle in adolescents. The underreporting of bicycle accidents by the official statistic is significant.

Exposure to environmental hazards and the risk of male infertility - multicenter national study in Poland

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This project is focused on the exposure to environmental factors and the risk of male infertility in Poland. Factors affecting fertility will be assessed.

The study population will consist of 350 men attending to infertility clinics from different Polish regions including central, south-western, south, south-eastern and north part of Poland.

The specific goals of this project will be focused on:

1. The evaluation of the exposure of males to specific environmental hazards and assessment of their link to the indicator of semen characteristics
2. The assessment of epidemiological trends of fertility and infertility in different regions of Poland
3. The use of modern molecular biology, genetics, and epidemiology in studies of causes of male infertility
4. Identification of diagnostic algorithms in male and female infertility

1) The semen samples will be analysed in one laboratory according to the WHO manual for basic semen analysis. Moreover computer assisted sperm analysis will be used to examine sperm motility. The morphology of the sperms in this project will be determined on PAP stained smears using the WHO criteria.

2) Sperm chromatin damage (fragmentation index) will be assessed using Sperm Chromatin Structure Assay.

3) The sperm aneuploidy rates will be assessed for chromosomes X, Y, 13, 18, and 21

Scope of environmental factors will include: exposure to phthalates (whole examined population), air pollutions (PM 2,5) in urban area, to pesticides in rural areas and to: dioxins and, PCBs.

Exposure to Environmental Tobacco Smoke, GSTM1/GSTT1 and Oxidative Stress

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Objectives: Environmental Tobacco Smoking (ETS) has been known to be associated with the adverse pregnancy outcomes. Oxidative stress in utero may affect fetal growth and development. The purpose of this study was to investigate the association between exposure to ETS and oxidative stress for pregnancy women and the modification effect by GSTM1 or GSTT1.

Methods: We measured urinary concentration of cotinine using radioimmunoassay in 266 pregnant women who denied smoking cigarettes during pregnancy. The urinary concentrations of Malondialdehyde (MDA) and 8-hydroxy- 2-deoxyguanosine (8-OHdG) were assessed by High Performance Liquid Chromatography (HPLC) and ELISA kit, respectively.

To determine the GSTM1 and GSTT1 genotypes of mothers, we used polymerase chain reaction after extracting DNA from whole blood. Basic characteristics and lifestyle factors were informed by a self-administrative questionnaire.

Results: Urinary cotinine concentration was significantly associated with urine MDA and 8-OHdG concentrations. For the subgroup of pregnant women whose GSTM1 is null type, each increase of 10 μ /g creatinine in urine cotinine concentration was associated with a 3.8 μ mol/g creatinine increase in urine MDA concentration (P value<0.01) and a 4.5 μ /g creatinine increase in urine 8-OHdG concentration (P value<0.01). In contrast, for the subgroup of pregnant women whose GSTM1 is wild type, urine cotinine concentration was not significantly associated with urine MDA (P value>0.05) or 8-OHdG concentration (P value>0.05).

Among GSTT1 null type subgroup, urine cotinine concentration had not significant association with urine MDA (P value>0.05) or 8-OHdG concentration (P value>0.05). For the GSTT1 wild type group, each increase of 10 μ /g creatinine in urine cotinine concentration was associated with a 4.8 μ mol/g creatinine increase in urine MDA concentration (P value<0.01) and a 6.5 μ /g creatinine increase in urine 8-OHdG concentration (P value<0.01).

Conclusions: Our study results suggest that ETS increases the urine level of MDA and 8-OHdG in pregnant women, particularly for those with GSTM1 null or GSTT1 wild type carriers, indicating that smoking cessation is required among household members during pregnancy to prevent in utero oxidative stress, particularly for genetically susceptible women.

Five nations assessments on HIV and Infant Feeding (IF)

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Background: IBFAN Asia Pacific and WABA, as part of the work of the International Task force on HIV & IF jointly proposed a rapid assessment on the issue at country level in order to find out how HIV and infant feeding is being addressed in the PMTCT programmes as part of HIV AIDS Programmes, specifically to list the processes being followed by a country. The countries selected for this study were: Afghanistan, Bangladesh, Nepal, Malaysia and Indonesia

Objective: To learn the countrywide situation on HIV and Infant Feeding in order to take AFAAS measures for combating the situation

Methodology: The study was conducted with two methods:

- 1) Interview with the key stakeholders in HIV & IF
- 2) Descriptive study through semi-structured Questionnaire
- 3) Self-explanatory process

Result:

Issues	Afghanistan	Bangladesh	Indonesia	Malaysia	Nepal
National Program on HIV/AIDS	No	Yes	YES	YES	NO
Nodal agency on HIV	No	Yes	YES	YES	NO
National Policy on HIV IF	No	no	YES recommends artificial feeding	YES, recommends artificial feeding	NO
Policy on PPTCT	No	Yes	Draft ready	Yes	No
Capacity building in infant feeding counseling	Absent	Absent	Lack of training program	Needs strengthening	absent

Acknowledgements: The technical and financial support of IBFAN AP and WABA is acknowledged

Highlights on some environmental health problems of children in Poland

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Health consequences of environmental hazards are recognized by Polish medical professionals. Although activities in the area of children environmental health are rather dispersed, there is a lot of information of the environmental risk factors in Poland and initiatives aimed at prevention of its health effects in children, research projects, monitoring and prevention programmes developed by the research institutes and community based organisations.

Main environmental hazards in Poland are related to the outdoor air pollution, in particular in urban and industrialized areas (Upper Silesia, Legnica Province), quality of indoor air (especially exposure to tobacco smoke), low level of physical activity, overweight and obesity and injuries. Modernization of heavy industry processes, introduction of unleaded gasoline and policies to phase out leaded petrol resulted in significant reduction of ambient air pollutants emission since 90s (particulates emission - almost 75% decrease, SO₂ – 50%, Pb – 50%). However, according to the results of ISAAC study in Poland from 1994/95 and 2001/02 the number of diagnosed cases of asthma and other symptoms from the respiratory system increased (approximately 200% for asthma). One of the serious problems is tobacco smoking. Percentage of smoking schoolchildren reached up to 21,5% in 2002-2005.

In Poland, the social and economic transitions of the last decade changed the potential for childhood lead exposure. Mean blood lead levels [BLLs] observed in Polish children lowered but they are still higher than in children from Western European countries. Between 1993 and 1999, mean [BLLs] in young Silesian urban children ranged from 5,9mg/dl to 8,3mg/dl among the cities, with more than 13% children having elevated BLL. In schoolchildren from Legnica Province in years 1991-1995 mean BLLs decreased to 6,95µg/dl. In years 1996-2002 BLLs lowered to average 4,6 µg/dl. Nevertheless in about 20% of children the BLL still remained above 6 µg/dl.

How can knowledge of fetal metabolism help to interpretate genome damage caused by transplacentally transported xenobiotics

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Genome damage in fetus caused by transplacentally transported xenobiotics is a result of a complex interaction between (a) maternal and fetal metabolism (hepatic and extrahepatic), (b) fetal developmental stage and pregnancy-related bioaccumulation of metabolites, and (c) detoxification capacity of the fetus and mother (including endometrium). Interaction between xenobiotics and their metabolites even at low doses may have synergistic and long-term health effects. Exposure to dietary genotoxicants may lead to the interaction of different metabolic pathways in the fetus and mother as a consequence of dynamic maturation of metabolic pathways in fetus. Production of clastogenic or aneugenic metabolites of the same xenobiotic can differ between the first and the third trimester of pregnancy. Most of food additives or their metabolites are transplacental xenobiotics. Ethanol, for example, is metabolized with higher efficiency in mothers but the biological effect in the fetus is influenced by its low clearance capacity. Lipoyxygenase activity caused by aflatoxin B-1 is significantly higher in prenatal liver tissue in comparison to adults, while detoxification by epoxide hydrolase is twofold higher in adults. Acrylamide metabolite glycidamide is recently linked with the formation of micronuclei probably via mutations at thymidine kinase locus. Dioxin metabolism is detected in extrahepatic tissues and its complex metabolism and multi-target effects still need further research. The same is true for a number of other xenobiotics whose fetal metabolism is described only on animal models. In order to properly interpret genome damage caused by food additives in newborns future research demands: pharmacokinetic studies across different developmental stages, molecular characterization of target binding sites, and better understand of the synthesis and activation of nuclear proteins (transcription factors) and nucleotide pool disturbances, and impact of 4-hydroxynonenal. The inconsistency of genome damage between animal and human fetuses shows that animal data have a limited value in human population biomonitoring. This reconfirms the need to enforce genome damage studies in humans.

How to protect children from environmental tobacco smoke exposure?

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Environmental tobacco smoke is a significant public health problem. Parental smoking abstinence is the most effective way to protect children from ETS exposure. Because of health consequences parents should quit smoking in prenatal or even in preconceptional period and continue smoking abstinence also in postpartum one. Smoking cessation interventions can increase the cessation rate an effective intervention should be tailored to individual needs, taking into account the specific risk factors for each parent.

There are several components of effective anti-smoking intervention. The National Cancer Institute developed an approach to brief smoking cessation treatment for adults which is referred to as the 4-A model (ask, advice, assist, arrange follow-up). First it is important to ask each parent during every physician visit whether she/he smoke, document the smoking status and notice how addicted to nicotine they actually are. Fagerstrom's Test for Nicotine Dependence is an easy way to assess nicotine addiction. The other test "Why do I smoke?" can help smoker find the reason for smoking. Person conducting the intervention should strongly advise smoking parents to stop smoking and link smoking cessation to both smoker's and children's health. It is particularly important to explain adverse effect of smoking during pregnancy as well as the consequences of passive smoking for infant and small children and benefits of quitting smoking. Intervention should be conducted taking into account the smoker's readiness to quit smoking. Once smokers are motivated to quit smoking, it is incumbent on person who conduct the intervention to assist them. Stress management techniques, and modest exercises, diet recommendations and nicotine replacement therapy may be recommended where appropriate. The self-help manuals that provide a variety of behavioral suggestions for modifying smoking and preparing for quitting are useful tools. In the experiences from various smoking cessation interventions signature of the declaration of "Quit day" can help in quitting smoking.

The crucial thing for the person conducting the smoking cessation intervention is to not only concentrate on pregnancy but also on postpartum period and children's environmental tobacco smoke exposure after birth.

Improvement of the Crimean children health through iodine and quality drinking water provision

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The main aims were to estimate relationship of the drinking water quality and human health including children; to exam children health in relation to thyroid pathology; to raise awareness of the Crimea broad public, specialists and local officials; to implement practical actions to improve children health.

In the target regions (two rural districts and three cities) we analyzed medical statistics 1993-2005 data and monitored drinking water quality in 2003-2005. The highest kidneys sickness-rate was revealed in Djankoy's district where there is a high mineralization of the drinking water. Also, we defined Kertch city as a leader in Crimea related cancer sickness; we guess high level of chlor-organic substance in the Kertch drinking water revealed by us influences considerably to the cancer sickness. 1000 children of the target regions were examined by endocrinologist and pediatrician. As a result there were revealed children with diffusive goitre, totally 25-33% of examined children. These children (totally 325) received the iodine containing medication during two years under medical control each six months. Second medical examination revealed 52% of the children are cured and third medical examination showed 92% are cured. Drinking water purification systems was set in Kertch boarding-school and Lobanovo rural school. Results of all studies and practical actions were disseminated broadly through Crimean media, round-tables, five public hearings, lectures, booklets publishing.

The best results related the children health improvement is reached in Kertch where children were provided by the quality drinking water and iodine containing medications. We conclude the drinking water quality is an important factor forming the human health in Crimea. Also, raising public awareness facilitates decisions taking and public motivation in relation to health improvement.

Indoor air quality assessment in relation to health impacts on children a new perspective from Central India

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Air pollution is a major environmental health problem affecting the developing and the developed countries alike. The effects of air pollution on health are very complex as there are many different sources <http://edugreen.teri.res.in/explore/air/health.htm#source#source> and their individual effects vary from one to the other. It is not only the ambient air quality in the cities but also the indoor air quality in the rural and the urban areas that are causing concern. In fact in the developing world the highest air pollution exposures occur in the indoor environment. Most people spend the majority of their time in indoors, where air can be much more polluted. Our studies have been done on indoor air pollution in areas of Chhattisgarh, Central India. In this region, due to excess of natural resources and for economic reasons, people use solid fuel for cooking and heating fuels. These fuels on incomplete combustion generate high levels of toxic pollutants such as CO, SO₂, NO, NO₂ and Particulate Matters. These represent an important risk factor for human health. We have investigated the level of Respirable Particulate Matter (PM₁₀ & PM_{2.5}) and mutagenicity in the PM_{2.5} fraction as well as temperature and humidity, in the interior of houses. In addition, we have conducted a survey about symptoms, signs and respiratory diseases associated with socio-economic factors in the area. The survey showed that in children most respiratory diseases occur during winter (75%), the most frequent complaint being bronchitis (76%) and obstructive bronchitis (59%). The higher pollutant concentrations were observed during heating hours, in houses that used coal (range PM₁₀ 450-1600 µg m⁻³), or firewood (range 185-1250 µg m⁻³). Coal, firewood and cigarette smoke were important sources of mutagenic and carcinogenic. In the houses studied, the population was exposed to levels of toxic pollutants that are much higher than those found outdoors in the highly polluted city of central India. In addition, overcrowding, excessive indoor humidity, very low indoor temperatures when the heating system was turned off, the presence of domestic animals, cats and dogs indoors and general lack of hygiene (with attendant bacteria and fungi) are risk factors to explain the high incidence of respiratory diseases in children.

Key words: Indoor Pollutants, Particulate Matter, Health Problems

Influence of indoor air quality on health of children in all-day schools in Austria – a project design

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In industrialised countries people spend about 90 % of their life time indoors. Hence, indoor air quality has a significant influence on productivity and health of humans. Especially children should be protected from exposure to indoor chemicals since they have higher rates of resorption and ventilation and a higher specific uptake of pollutants in comparison to adults. Moreover, children are organisms at the stage of development and therefore are susceptible to disorders caused by certain chemicals.

In the frame of the project LUKI (LUft und Kinder, i.e. Air and Children) extensive measurements of pollutants (150 screening parameters plus ~ 50 individuals) in exposure relevant interiors (all day schools) were carried out. Two locations in each of nine schools were sampled in an autumn 2006 and spring 2007 sampling campaign. The screening comprised of parameters like phenols, PAHs, pyrethroids, alkyl phenols, phthalates, PCBs and more. Moreover, individual parameters as heavy metals, organotin compounds, NO₂, CO₂ and volatile organic compounds (VOCs) were analysed. Both household dust, particulate matter (PM₁₀ and PM_{2,5}) and air samples were investigated in order to cover the whole indoor air relevant matrices. Results will be assessed in terms of their toxicological relevance.

Analytical measurements were accompanied by medical check-ups of pupils (aged 6-7 years) and by a questionnaire in order to compare the pathway air with other relevant pathways for the uptake of these pollutants (e.g. nutrition). Check-ups comprised of lung/respiratory parameters and cognitive tests.

Furthermore, a biomonitoring for heavy metals in sculp hair samples and milk teeth was carried out and woodlouses were collected and analysed as bio indicators for determining the background concentrations of heavy metals at school. Children were involved in the sampling of woodlouses in order to provide knowledge about environmental interrelations.

The project aims at identifying pollution sources and at providing suggestions for improvements. The final report will be issued by 2008. The project contributes to the WHO CEHAPE (Children's Environment and Health Action Plan for Europe).

Parental SES (Socioeconomic Status) factors and pregnancy outcomes in prospective cohort study using a path analysis

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Objective of the research: A number of studies have identified the association between birth weight and parental characteristics. Comparing birth outcome with parental socioeconomic status, previous studies have been subject to the effect of confounding by unmeasured or unknown risk factors, such as paternal smoking and maternal occupation and so on. To date, no study looked at the effect of parental socioeconomic status on birth outcome using path analysis.

In this study, we examined the interrelationship among numerous estimated contribution of each confounding factors and pregnancy outcomes, using a path analysis.

Brief summary of the content: The total population was 656 women who visited prenatal care service between 8 weeks and 28 weeks from 2001 to 2004 at Ewha Womans University Hospital, Seoul, Korea.. We estimated the relationship between birth outcome and SES factors such as income and the five different level of parental education. In this study, there were a number of paths between parental characteristics and pregnancy outcome. The path model shows that gestational age, paternal education, parity and weight before pregnancy directly acted on the birth weight. The birth weight and gestational age were mainly increased by paternal education level but maternal education was relatively less important to birth weight and gestational age than paternal education. We also found that the different level of income may partly account for the birth weight indirectly. After considering other possible factors, we concluded that paternal education had direct effect and possibly causal association with birth weight.

Conclusions: Our results are consistent with numerous studies of socioeconomic status and birth weight. Path analysis is a technique to assess the direct causal contribution of socioeconomic variables and birth outcome during pregnancy.

Acknowledgments: This study was supported by the Ministry of Environment, Republic of Korea.

Pesticides exposure and children's health: a qualitative ecosystem health approach

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Objective: The main aim was to study the social, cultural and gender context related to pesticide exposure and its effects on children's health living in the vicinity of banana or plantain plantations.

Methodology: Key actors helped us to identify two communities near by, either banana (multinationals) or plantain (small scale) plantations. Eight focus groups were held with mothers and fathers (separately) of children aged 7; we also interviewed 18 key actors in order to know what their perception of pesticides was.

Results: Parents from both communities considered pesticides as a something good for plantations, but dangerous for people's health. However, mothers (house wives) from the banana community stressed that pesticides are very bad for children's health, while fathers emphasized the advantages for banana cultivation. Parents from both communities identified several routes of exposure. House wives recognized less routes than the rest. Key actors mentioned more routes of exposure than fathers and mothers. The information sources regarding pesticide use and its effects on health differed for mothers and fathers, and for both communities. Yet, they were very limited for both communities.

Parents and key-actors from both communities were eager to learn more about pesticide exposure and its health effects.

Conclusion: There were differences on pesticide perception among mothers and fathers but mainly between workers and house wives.

Protecting children from exposure to lead in children's jewellery

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Objective: To determine whether voluntary compliance or regulation is more effective in removing children's lead-containing jewellery from the marketplace

Content Summary:

Lead is an inexpensive heavy metal often used in costume jewellery. However, lead is highly toxic, especially to children, even at very low exposure levels.

Following a 1998 incident in which a child developed elevated blood lead after chewing on a child's pendant made of lead, Health Canada requested that the Canadian retail industry voluntarily refrain from marketing jewellery which contained more than 65 mg/kg total lead and was intended for children under fifteen years of age. National retail surveys in 2000 and 2002 determined that children's lead-containing jewellery was still widely available and that voluntary measures had been ineffective in removing these products from the Canadian marketplace.

As a result, Health Canada initiated regulatory control of the lead content of children's jewellery. The Children's Jewellery Regulations, which limit the lead content of jewellery items intended for children under 15 years of age to 600 mg/kg total lead and 90 mg/kg migratable lead, came into effect on June 1, 2005. A 2006 survey showed that the proportion of children's lead-containing jewellery on the Canadian marketplace has declined significantly since 2002.

Conclusions: Health Canada identified numerous factors that contributed to the failure of voluntary measures in eliminating children's lead-containing jewellery from the Canadian marketplace. Where these factors are present, regulation is the preferred option for controlling environmental risks to children's health.

Reconsideration of early childhood vaccination

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It has been an existing trend in health services management to vaccinate children at the earliest age possible in order to protect the children better from various serious diseases. Diphtheria, Pertussis, and Tetanus (DPT) vaccine for instance, has been recommended to be provided at less than three months old baby, as for BCG vaccine is even recommended at earlier age, i.e. at birth. However, whether such a health technology is in fact beneficial for the children is still hypothetical. On the other hand, the provision of multiple vaccines to early childhood might even be less effective since the immune system of the children is not yet well developed. Moreover, the response of smaller children in neutralizing toxic materials exposed to them might also still be weak. Provision of vaccines to children means not only providing the children with active materials of the vaccine, but also at the same time exposing the children to toxic substances available within the vaccine. Most vaccines in fact contain heavy metals mercury for preservative purposes and it has been well recognized that mercury is toxicant to human body. Therefore, possible health risk of giving multiple vaccines to early childhood should have more medical concern due two consideration, i.e. less developed immune system and higher risk of intoxication as the ratio of toxic material concentration exposure and the body weight of children is relatively greater.

Findings of an epidemiological study conducted in Airlangga University in 2003, entitled "Effect of Mercury containing Vaccine to the Prevalence of Autism", seem supporting such a concern. A case-control method has been used. A sample of 81 children under five who suffer from acquired autism has been compared to 81 children without autism. Variables related to autism such as age, pollution, delivery trauma, genetic endowment, and convulsion have been eliminated either by design or by statistical analysis. The result of the study clearly indicated that children with autism have been exposed higher level of mercury containing vaccines compared to those without autism. Odd Ratio was 9.69 with $p < .000$. Dose-response relationship analysis also confirm the result. Logistic regression analysis indicated that more frequencies of getting mercury containing vaccine is related to higher risk of getting autism. The regression showed that risk of getting autism with 6 vaccination or more during early childhood will be .09 (?) if other confounding variables are excluded.

As the conclusion, it is suggested to reconsider seriously the use of mercury containing vaccines in early childhood as the risk of getting side effect of such soft technology in health care system is relatively clear. More scientific evidence is yet to be required to support vaccination in earlier childhood.

Surabaya, Indonesia, December 2006

Social inequalities and pediatric cancer in region of Murcia (Spain)

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Cancer control researchers seek to reduce the burden of cancer by studying interventions, their impact in defined populations, and the means by which they can be better used.

In our knowledge, the first step in paediatric cancer control system is developing Pediatric Environmental History (individual risk assessment) and the second step is identifying where the cancer burden is elevated, which suggests locations where interventions are needed (community risk assessment). The combined use of the Geographic information systems (GIS) & spatial analytic methods (exploratory data analysis) provide a helpful tool and thus can play a major role in pediatric cancer control. Both were used to spatial cluster detection and link the exposure model with the demographic, socio-economic and cancer data of the 280 children with cancer from Region of Murcia. Standardized incidence ratios (SIRs) in 9-year age bands (1998-2006) were calculated for 45 different exposure areas (municipalities).

The results indicate lack of spatial cluster (hot zones) with elevated rates of SIRs in several municipalities. There was a scarce or null correlation with indicators of industrial activity and outdoor air quality, but they present high correlations with socioeconomic level indicators (rates of unemployment, Gross Domestic Product).

In Murcia, poverty rather than to living in medium or higher polluted areas seems to be the most important determinant to develop PC. Schematically this could, to mean that the poverty increases the exposure to carcinogenic agents and/or decreases the exposure to protective agents in school and home settings (domestic exposure) rather than the polluted areas (urban exposure).

Inequalities in health reflect social inequalities in society. The incapacity of our society to eliminate poverty is indeed one of the most blatant examples of failure in prevention.

The integration of the model in a GIS, together with individual data on Pediatric Environmental History will help in demarking individual and community exposures and identifying risk factor related with PC.

Students' musculoskeletal disorders

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Keywords: musculoskeletal disorders, unhealthy postures, inappropriate furniture

Objective: The aim of the study is to assess the morbidity due to musculoskeletal disorders in students ageing 10-11 years. We had in view the correlation of morbidity due to musculoskeletal disorders with the physical growth, unhealthy postures and inappropriate furniture.

Summary: This is a pilot study which has been carried out on a sample of 200 students from 3 schools in Bucharest. The assessment has been carried out through: clinical and anthropometrical examination of students and determination of musculoskeletal disorders percentage; inventory of the existing pieces of furniture including measurement of chairs, desks and comparison with standards. The data have been processed and analyzed through EPI-INFO and SPSS program.

A presence of 45% of scoliosis attitude in the assessed sample represents an alert signal.

Students (55%) complain about several ailments (back, shoulder, nape, arms) after sitting for a long time and in an unhealthy position at the desk.

Conclusions: Students' musculoskeletal disorders are similar to those of adults. The prevalence rates are comparable and the underlying risk factors are nearly alike. This insight could also help us develop better strategies to prevent risk factors from having an impact already at a young age. We need programs educating students in ergonomic principles. Hopefully, such a program would result in students reflexively adjusting their breaks, not necessarily with expensive equipment: let's prepare them so as to be sure that they will use a healthy posture and sound working habits.

Assessment of physical activity and obesity in children according to Regional Priority Goal 2 of CEHAPE at national and regional level based on environmental health indicator system

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Hungary has been involved in the elaboration of the environmental and health information system in Europe since 2000, participated in ENHIS1 and ENHIS2 projects.

A comparative assessment was done on international level based on the ENHIS2 indicators belonging to RPG2: (1) physical activity of children, (2) rate of overweight and obese children (3) review of legislation to reduce obesity of children in Hungary (4) Review of legislation supporting safe traffic of children.

Assessment on the South-Lowland Region of Hungary was further based on the following indicators and data:

(1) Rate of overweight and obese children at the age groups of 3-6y, 7-14 years. (2) Food availability in school-buffets (3) Reviewing the menus of institutions producing food for children in County Békés (4) Assessment of the structure of cycling roads, plans of improvement of the structure etc (5) Physical activity of children.

The use of CEHAPE indicators proved to be useful to assess the environmental health state of children on regional level; the following recommendations can be formulated on national and on regional level:

(1) Education of parents, teachers and care-takers concerning the risk factors of childhood obesity. (2) Advertisement of healthy diet among children and parallel the gradual exclusion of unhealthy food from the offer of school buffets. (3) Advertisement of the necessity of regular physical activity of children for parents, teachers and care-takers, (4) support of physical activity of children on community level (5) improve and rationalize cycling road system, to advertise cycling and other kinds of safety transport for children.

The attitudes to the own health and healthy lifestyle among urban and rural school-children

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The purpose - was to determine the assessment of own health and behavior of healthy lifestyle among 15-17 years aged urban (U) and rural (R) school-children (SC).

The methods: In 2005, 200 U school-children and 178 R school-children in Lithuania are randomly questioned by the closed type questionnaire, made according HBSC questionnaire.

Results: Detected, that RSC more often indicate being off-colour or unhealthy (16.9%) nor USC (9.0%), $p < 0.05$. During the past 12 month without any acute diseases were similar number school-children (USC – 42.5% and RSC – 35.5%). The U and R school-children indicate having varies psychosomatic complaints (7.6% and 16.3%, respectively). The USC more often indicate head ache, nervous stress, back ache, but RSC more often indicate weakness, head ache, were bad moods ($p < 0.05$). About health more school-children got from parents (28.1%) and medical personal (35.4%) nor from teachers (4.7%), $p < 0.05$. Healthy lifestyle were learning during nature discipline and physical exercise lessons nor other discipline lessons ($p < 0.05$); USC more often during nature lessons (55.3%) and RSC more often during physical culture lessons (58.7%). More than half questioned SC indicate, that would like more to be in motion (USC – 84.5%, RSC – 66.8%), however sporting more than 4 hour during week USC were only 9.5%, RSC – 11.6%. USC more often sporting in the sport clubs – 40.5%, so RSC – sporting stand-alone – 41.1%. Sport schools attended respectively 16.7% and 14.6%, schools sports circle 10.7% and 18.7%. School-children boys were sporting more than girls. 83.3% questioned try smoking, equally number U and R school-children (83.4% and 83.2%). Permanent smoking 43.1% of USC and 29.8% of RSC ($p < 0.05$). Alcoholic drinks try drinking 92.7% of USC and 91.6% of RSC.

Conclusions: The urban and rural schools must more attention pay for school-children health; permit more to be in motion and conditions to exercise, to propagate healthy lifestyle in all subjects lessons.

The influence of socio-economic factors on health and health-related behaviour of adolescents in Georgia

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STUDY OBJECTIVE: To investigate the impact of different socio-economic factors on health and health-related behavior of adolescents in Georgia.

DESIGN: Some data concerning adolescents' health and health-related behavior in Georgia were extracted from the special self-reported survey (n=9499) (K.Pagava et al., 2006). There was compared the prevalence of answers, according to which respondents (15-17 years old) - a) supposed that his/her health in general was POOR and AVERAGE, b) missed school due to the illness EVERYDAY-ONCE A WEEK, c) needed help for stress, tension, d) needed help for sadness, depression, e) smoked regularly, f) had drunk more than 5 dosages EVERYDAY - ONCE PER WEEK - ONCE PER MONTH, g) used cannabis. The comparisons were made in 13 homogeneous regions of Georgia, among pupils who lived in rural areas and fulfilled questionnaires in Georgian language (n=1324). At the same time three independent experts evaluated the socio-economic status (1.Level of unemployment, 2.Income, 3.Food supply, 4. Social infrastructure, 5.Education/culture/social capital, 6.Environmental safety) in the same regions. Several techniques from statistical analysis such as correlation analysis as well as aggregation procedures from the theory of fuzzy sets and fuzzy logic were used.

RESULTS: The most expressed correlation ($r>0.66$) was revealed between substance abuse indicators (e,f,g) and some socio-economic factors (2, 4, 6, and to a lesser degree 5). The correlation between physical health indicators (a, b) and socio-economic factors was low.

CONCLUSIONS: Fuzzy set techniques can be employed for identifying the precedence of different socio-economic factors' influencing the health and health-related behavior of adolescents.

Additional information to the abstract: "The Influence of Socio-Economic Factors on Health and Health-Related Behavior of Adolescents in Georgia" by K.Pagava et al.

VOCs(Volatile Organic Compounds) personal exposure and pregnancy outcome in a cohort study of mothers and children's health and environment (MOCHE)

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Objective of the research: Several studies have found that VOCs concentration was associated with adverse pregnancy outcomes. The purpose of the study was to investigate the effect of VOCS on pregnancy outcomes.

Brief summary of the content: MOCHE, a multi-center birth cohort study has been initiated in Korea since 2006. Pregnant women in the first trimester of pregnancy and their spouses were recruited from three collaborating centers in Seoul(metropolitan area), Ulsan(industrial area), and Cheonan (medium-sized urban area). Participants were followed up until delivery and were interviewed by trained nurses to collect information of environmental exposure as well as of general characteristics. Environmental hygienists visited each participant's house and measured the VOCs in personal environment for 72 hours. The air samples by the passive samplers were analyzed using gas chromatography/mass selective detector.

In this study, preterm birth was 6(6.67%) and low birth weight was 5(5.56%). The personal mean concentration of toluene and m-xylene were 210.66 $\mu\text{g}/\text{m}^3$ and 71.11 $\mu\text{g}/\text{m}^3$, respectively. Toluene and m-xylene exposure decreased the gestational age by 0.57 weeks and 0.21 weeks, respectively. The odds ratio of preterm birth were 1.82 (95% CI=0.17-18.83) for toluene and 1.62 (95% CI=0.62-4.18) for m-xylene of each unit increase in exposure, although these were not statistically significant. However, the gestational age was significantly reduced in higher exposure group of toluene(≥ 75 th percentile : $\geq 247.12 \mu\text{g}/\text{m}^3$) by 2.11 weeks than in lower exposure group.

Conclusions: This study suggests that the personal exposure to VOCs during pregnancy may contribute to the adverse pregnancy outcomes.

Acknowledgments: This study was supported by the Ministry of Environment, Republic of Korea.

Environmental exposure depending on socioeconomic status in Korean children: two years' results of Children's Health and Environmental Research (CHEER)

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We aimed to examine whether environmental exposure distributes unequally according to socioeconomic status (SES) in Korean children.

As a part of the Children's Health and Environmental Research in Korea to investigate the effects of the environmental exposures on allergic diseases and neurobehavioral development in children, launched since 2005 and enrolled a total of 5,348 elementary school children for 2 years, we measured blood lead and mercury levels among 4,573 children aged 7 to 13. As indices of SES, family income and parental education levels were used. We compared the least square means of lead and mercury concentrations by SES level, adjusted for children's age, gender, height, weight, residential area and passive smoking. The exposure risks of passive smoking were estimated adjusted for age, gender and residential area.

The geometric means (range) of blood lead and mercury concentration in all children were 1.68 ug/dl (0.02, 26.49) and 2.00 ug/l (0.01, 19.60), respectively. Forty one percent of children were reported to have passive smoking exposure. The lead concentration was decreased according to increasing family income: 1.78, 1.68, 1.62, 1.64, and 1.28 ug/dl in children with monthly family incomes of <1,000, 1,000-<2,000, 2,000-<3,000, 3,000 -<5,000, and 5,000 or more dollars, respectively (p-trend; 0.008). The results using parental educational levels instead of family income showed similar trends. The blood mercury concentration showed a borderline significant inverse relationship only with family income (p-trend; 0.078). The exposure risk of passive smoking was significantly increased according to decreasing family income: odds ratios (95% confidence intervals) were 0.94 (0.72, 1.23), 1.24 (0.96, 1.61), 1.68 (1.28, 2.19), and 1.78 (1.28, 2.48) in children with 3,000-<5,000, 2,000-<3,000, 1,000-<2,000, and <1,000, respectively, compared with children with 5,000 or more dollars of monthly family income. The exposure risk of passive smoking was also significantly increased according to decreasing parental educational levels (p-trend; <0.0001). We found environmental exposure distributed unequally depending on SES in Korean children.

Indoor air pollution and asthma

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Objective of the study:

This study tries to assess the health status of children with bronchial asthma, hospitalized in one of the children's hospitals from Bucharest for acute asthma attack, in connection with their biological exposure at home (exposure to bacteria and fungi in air).

Summary of the content

The assessment of the biological air contamination included the measurement of bacterial and fungal levels in children's homes as well as the assessment of health status of the subjects. Measurements of the bacteriological and fungal levels of contamination were made in each home: in the living room, in the kitchen, in the bathroom and in the bedroom of the asthmatic child. The results showed that in many homes the level of fungal contamination was very high in all investigated rooms. The highest values measured were: 2802 CFU/m³ in the living room, 2302 CFU/m³ in the kitchen, 7675 CFU/m³ in the bathroom and 10859 CFU/m³ in the bedroom (highest overall).

From the bacteriological point of view, the highest contamination levels of bacteria in air were found in the bedroom of the child with asthma and were equal to 8256 CFU/m³.

82% of investigated children have breathing difficulties and 76% of them were repeatedly hospitalized starting from the age of 2 years old. 76% of the investigated subjects receive treatment for the symptoms of the disease.

Conclusions:

The results of the study revealed that, in the indoor air of the homes of investigated asthmatic children, there were high levels of bacteria and fungi especially in the asthmatic children rooms. The study also revealed that there are severe effects on children's health as a result of high levels of bacterial and fungal contamination.

The puzzle of pesticides and childhood cancer

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Objectives: Epidemiological studies have reported associations between childhood cancer, and either parental or child exposure to pesticides. Reviews have been published in 1997, 1998 and 2006 where the evidence was found suggestive but not conclusive. The present review is an extended update of the latter one.

Methods: The Pub-Med database was searched to identify published studies on this topic issued between 1998 and 2006.

Results: Thirty-six new studies have been identified for this review. Some cohort studies and the majority of the case-control studies suggest an increased risk for the cancers studied, associated with exposure in at least one of a large variety of exposure categories to pesticides. However, the evidence is conflicting with regard to cancer types as well as to causative factors across studies. The major shortcomings concern exposure assessment, where e. g. "farming" is treated equal to "exposure to pesticides", disregarding other possible exposures, e.g. to biological or infectious agents, and hitherto unidentified lifestyle factors. Also, many exposure categories used, mainly in case-control studies, lack chemical or toxicological plausibility. In most studies exposures were categorized as "ever vs. never", with little regard of exposure intensity or duration.

Conclusions: The available literature does not allow firm conclusions with regard to pesticides and any type of childhood cancer. But even if the reported associations were true, exposure to pesticides could not explain the vast majority of childhood cancer cases. Investing in the acquisition and critical review of exposure information appears to be the crucial step for causal assessment in future research. However, focusing on the presence of pesticides, and not asking the question why they were used, might mask relevant associations to other causative agents.

New knowledge about the impact of environmental exposure to PAHs in newborns

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The molecular epidemiology methods were used to analyze the impact of air pollution in pregnancy outcome studies in the Czech Republic. Organic compounds adsorbed to air particles (PM₁₀) induced DNA adducts in vitro studies. The carcinogenic PAHs (c-PAHs) contributed to 45-50% of all DNA adducts induced by these complex mixtures. The placental bulky DNA adducts were determined by ³²P-postlabeling assay. DNA adducts in placentas were affected by air pollution, smoking, genotypes, vitamin C levels. Higher DNA adducts were observed in nonsmoking mothers delivering children with IUGR (intrauterine growth retardation). In the Pregnancy Outcome Project, an increased risk of IUGR was established for mothers who were exposed to PM₁₀ levels >40 µg/m³ or PM_{2.5} > 27 µg/m³ during the first month of gestation. For each 10 µg/m³ increase in PM₁₀, the risk of IUGR was 1.25 (CI 1.08-1.56). A highly significant increase of IUGR risk was found for exposures to c-PAHs > 15 ng/m³ – again exclusively during the first gestational month. This relationship proved to be strongly dose-response related: per 10 ng/m³ elevation of c-PAHs level, the risk was 1.22 (CI 1.07-1.39). The relationship between the birth weight and genetic polymorphisms of metabolic genotypes were studied using DNA from placental samples. Birth weight was significantly decreased by smoking, ETS and genetic polymorphisms of CYP1A1*2C and EPHX1. c-PAHs seem to be an important source of genotoxic and embryotoxic activities of organic mixtures associated with urban air particles.

These are new results, indicating the significant impact of c-PAHs to the early stages of fetus development. Keeping in mind the number of possibly exposed mothers and children in all world, they symbolize the new risk for human population, not recognized, yet.

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Author Index:

- Aguinalde X.; p.76
Al-Amin M.; p.68
Aleksandryan A.; p.79
Alimonti A.; p.37
Amsyari F.; p.130
Anakhasyan E.; p.82
Antypas A.; p.93
Artov A.; p.124
Atkins L.; p.93
Axelrad D.; p.27
Babisch W.; p.65
Babjakova J.; p.104
Baeyens W.; p.34
Baker M.; p.42
Ballester F.; p.76
Bare V.; p.49, 99
Barr D.B.; p.86
Barraza D.; p.128
Batterman S.; p.69
Bechtold P.; p.103
Becker K.; p.41, 75
Benyi M.; p.51
Berezovsky E.; p.124
Berger M.; p.22, 23, 27
Bermudez M.; p.131
Besbelli N.; p.22, 23, 27, 32, 78, 85
Bettini M.; p.110
Bocari D.; p.49, 99
Boese-O'Reilly S.; p.1, 38, 39, 59
Bois C.; p.77
Bolte G.; p.92
Bonjour S.; p.22, 23, 24
Borthwick F.; p.93
Brune M.-N.; p.23, 31, 71
Bunatyan Y.; p.79
Cahn C.; p.93
Casale G.; p.103
Castren; p.62
Cavagni G.; p.103
Cavallini R.; p.103
Ceccatelli S.; p.62
Chang M.-H.; p.127, 134
Cherian E.; p.50
Chua S. K.; p.67
Ciznar P.; p.104
Clavel J.; p.88
Conrad A.; p.41, 58, 75
Conti M.; p.37
Cordeanu A.; p.115, 132
Cordeanu M.; p. 115
Cordoba L.; p.89, 128
Corra L.; p.1, 22, 23, 25, 47, 73
Covaci A.; p.34,
Cullen W.R.; p.35
Daburov K.N.; p.100
Dalbokova D.; p.22, 23, 25, 32, 95
Dargan P.; p.56
De Togni A.; p.103
Debes F.; p.86
Del Bene Davis A.; p.80

Demin A.; p.45
Demina I.A.; p.45
Den Hond E.; p.34
Dinh T.; p.102
Drasch G.; p.38
Ecclestone S.; p.22, 23; 25
Edwards S.; p.22, 23; 26
Eliava T.; p.105
Esplugues A.; p.76
Fabritius K.; p.115
Fan Z.-y.; p.53
Fedke G.; p.82
Ferencic Z.; p.122
Fernandez-Patier R.; p.76
Ferris i.T.; p.131
Filcak R.; p.93
Freire R.; p.111
Frumkin H.; p.15, 22, 23, 26
Fucic A.; p.122
Fuster S.J.L.; p.131
Gabizon S.; p.82
Gabos S.; p.35
Gabrielyan A.; p.112
Galagan M.; p.124
Gallo L.; p.103
Gambarelli A.; p.30
Gambini M.; p.103
Garcia Dos Santos S.; p.67
Gatti A.; p.30
Gazzolo D.; p.30
Gee D.; p.1
Gerbilsky L.; p.84
Ginzel K.H.; p.44
Gitin E.; p.107
Goodman D.; p.23
Gore F.; p.23, 26
Gorova A.; p.84
Grandjean P.; p.61, 66, 86
Grigol A.; p. 105
Grigoryan K.; p.82
Grimalt J.O.; p.76
Griniene E.; p.134
Gundacker C.; p.126
Ha E.-H.; p.114, 127, 136
Ha M.; p.119, 127, 136. 137
Hajdar L.; p.109
Hambartsumyan A.; p.112
Hamed B.; p.1, 23, 24
Hamid B.; p.1, 23, 24
Hamula C.; p.35
Hanke W.; p.43, 106, 118, 123
Harari H.; p.111
Harari R.; p.86, 111
Harper K.; p.93
Hashim Z.; p.1, 57, 67, 90
Hauser R.; p.107
Heinrich J.; p.17
Hellmann J.; p.58, 59
Hemon D.; p.88
Hisham Hashim J.; p.57, 67

Hohenblum P.; p.126
 Hollo P.; p.117
 Hong S.-J.; p.137
 Hong Y.-C.; p.114, 119, 127, 136; 137
 Howard V.; p.16
 Huidumac-Petrescu C.; p.132
 Hurrinag H.; p.1
 Hutter H.-P.; p.20, 126
 Im M.-W.; p.119
 Iniguez C.; p.76
 Irušen E.; p.69
 Isobaev M.; p.100
 Jack C.; p.69
 Jaiswal N.; p.36, 125
 Jansen K.; p.128
 Jantunen M.; p.95
 Jedrychowski W.; p.71
 Jena V.; p.36
 Jensen G.; p.1, 40
 Jurewicz J.; p.106, 118
 Kalandarishvili T.; p.105
 Karjalainen T.; p.94
 Karpova N.; p.62
 Kasymov O.; p.96, 101
 Katic J.; p.122
 Keall M.; p.42
 Khachatryan V.; p.79
 Kim B.-M.; p.114; 127, 136
 Kim C.S.; p.67
 Kim H.; p.114
 Kim J.C.; p.127, 136
 Kim S.Y.; p.137
 Kim Y.; p.127, 136
 Kim Y.-J.; p.114, 119, 127, 136
 Kim Y.K.; p.137
 Kiseliova T.; p.135
 Kistnasamy E.; p.69
 Klausbruckner B.; p.81
 Kleinjans J.; p.122
 Kolossa-Gehring M.; p.41, 75
 Konstantinou M.; p.91
 Koppe J.; p.1, 29
 Koppen G.; p.34
 Korrick S.; p.107
 Kristensen K.; p.102
 Kriviene I.; p.108
 Krzyzanowski M.; p.48, 95
 Kuchurkina I.; p.124
 Kundi M.; p.20, 33
 Kunseler E.; p.22, 23, 26, 32, 95
 Kurpas D.; p.54
 Kurth B.-M.; p.74
 Kwon E.; p.35, 137
 L'Azou M.; p.77
 Laloo U.; p.69
 Lane D.; p.103
 Lapi F.; p.103
 Lauriola P.; p.103
 Le P.T.; p.102
 Le Q.T.; p.102

Le T.; p.102
Lee C.K.; p.137
Lee K.-H.; p.119
Lee M.M.; p.107
Leem J.H.; p.137
Leijs M.M.; p.29
Leisner T.; p.125
Leridon H.; p.77
Lettmeier B.; p.38, 39
Ligocka D.; p.106
Lischka A.; p.81
Llop S.; p.76
Lob-Corzilius T.; p.59
Lopez G.V.; p.131
Lopez H.; p.131
Lorbeer G.; p.126
Losif L.; p.132
Ludecke A.; p.41
Luzati A.; p.49, 99
Mabrouk N.; p.27
Macsik A.; p.51
Maervoet J.; p.34
Maignan M.; p.101
Malbasic I.; p.93
Malnasi T.; p.133
Manliu A.; p.109
Manvelyan E.; p.82
Marco A.; p.76
Markovic D.; p.122
Medarova K.; p.93
Menegaux F.; p.88
Mentz G.; p.69
Michaelidou-Canna S.; p.91
Mieres J.J.; p.110
Mildner B.; p.122
Miller E.; p.97
Moldoveanu A.C.; p.138
Moldoveanu A.M.; p.138
Montanari S.; p.30
Monti V.; p.23
Moshammer H.; p.1, 20
Mukarromah N.; p.130
Murcia M.; p.76
Muszynska-Graca M.; p.121
Naginiene R.; p.108
Naidoo R.; p.69
Nastase E.; p.132
Nasterlack M.; p.139
Neira M.; p.14
Nelen V.; p.34
Nentwich H.; p.81
Neuberger M.; p.44
Nguyen T.N.A.; p.102
Nguyen V.N.; p.102
Nicolescu R.; p.115, 132
Oberfeld G.; p.1, 63
Olie K.; p.29
Onishchenko N.; p.62
Otto M.; p.64
Pagava A.; p.135

Pagava K.; p.135
Paldy A.; p.133
Paleomylitou M.; p.91
Palkovicova L.; p.104
Pall G.; p.117
Paramesh H.; p.19, 50
Paris E.; p.110
Park B.-H.; p.114
Park E.-Y.; p.119
Park H.-S.; p.114, 127; 136
Pastuszek B.; p.54
Patayova H.; p.104
Patel K.S.; p.36, 125
Patton S.; p.97
Paulson J. A.; p.28
Pavez R.; p.110
Pedersen F.; p.102
Petcu C.; p.115
Petersen E.; p.58
Petrauskiene A.; p.83
Petrela E.; p.49, 99
Phagava H.; p.135
Piko F.B.; p.116
Pirus C.; p.77
Pluhar F.Z.; p.116
Polanska K.; p.43, 123
Prochorov A.; p.124
Pronczuk J.; p.1, 23, 47
Radisauskas R.; p.134
Rahmani E.; p.49, 99
Raib J.; p.57
Ramirez F.; p.89
Ramon R.; p.76
Ranzi A.; p.103
Rausova K.; p.104
Rebagliato M.; p.76
Reichrtova E.; p.104
Reimer K.J.; p.35
Revich B.; p.107
Ribas N.; p.76
Rios J.C.; p.110
Robins T.; p.69
Roh Y.-m.; p.127, 136, 137
Rojas M.; p.128
Romizzi R.; p.1, 72
Rudant J.; p.88
Rudkowski Z.; p.1, 54, 121
Rudnai P.; p.51
Ruzickova K.; p.40
Saathoff H.; p.125
Sabri F.; p.62
Sakhkalyan E.; p.79
Salines G.; p.77
Salto M.; p.95
Samsad A.M.M.; p.113, 120
Samvel M.; p.82
Sandor R.K.; p.133
Saoke P.; p.87
Sarter H.; p.77
Sattler B.; p.80

Sattorov G.N.; p.100
Scharf S.; p.126
Schlaud M.; p.74
Schneider J.; p.126
Schoeters G.; p.34
Schulz C.; p.41, 75
Schurath U.; p.125
Seiwert M.; p.41, 75
Seltzer J.; p.21, 52
Senkoro H.; p.23
Seo J.-H.; p.127, 136
Sergeyev O.; p.107
Shamsudin S.B.; p.57
Sharshenova A.; p.96, 101
Shea K.; p.47
Sheffield S.; p.129
Shehi A.; p.49, 99
Shoko D.; p.38
Sidjimov M.; p.95
Simonyan L.; p.82
Siti Zamratol-Mai S.; p.67
Slama R.; p.17
Slotkin T.A.; p.44
Sobala W.; p.43
Song Y.-K.; p.127, 136
Sosa L.; p.128
Sram R.; p.140
Steger T.; p.93
Stober J.; p.47
Strugała-Stawik H.; p.54
Suh Y.-J.; p.114
Sunyer J.; p.76
Szabo E.; p.51
Tan Z.-w.; p.53
Tappler P.; p.126
Tarasenko V.; p.124
Ten E.; p.101
Thomson G.; p.42
Tusscher G.W.; p.29
Uddin M.; p.68
Uhl M.; p.126
Ullrich D.; p.41, 75
Uzzoli A.; p.116
v. Herrero M.; p.89
Valek A.; p.117
van Aalderen W.M.; p.29
van Den Bergh B.; p.34
van den Hazel P.; p.1, 46
Van Larebeke N.; p.34
van Wendel de Joode B.; p.89, 128
Vandentorren S.; p.77
Varnai D.; p.117
Varro M.J.; p.51
Vashneva N.; p.96
Venkatesh T.I.; p.55
Vermeir G.; p.34
Viaene M.K.; p.34
Villanueva C.; p.76
Vocaturro E.; p.95
von Ehrenstein O.; p.1, 18

von Mühlendahl K.E.; p.64

Vulsma T.; p.29

Wallner P.; p.20

Wang Z.; p.35

Wesseling C.; p.89

Westra M.; p.29

Williams P.; p.107

Winneke G.; p.60

Wolf U; p.74

Woodruff T.; p.22, 23

Xie X.-h.; p.53

Zaborskis A.; 83

Zace P.; p.49, 99

Zeilert V.; p.107

Zhang H.; p.35

Zhang S.-m.; p.53

Zhang Y.-f.; p.53

Ziegler P.; p.91

Zurlyte I.; p.95

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