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7TH FRAMEWORK PROGRAMME

Theme 6: Environment

Activity: Climate change, pollution and risks

Area: Environment and health

PROPOSAL FOR RESEARCH TOPICS IN THE FIRST CALLS FOR PROPOSALS

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DRAFT

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Sources

- FP5/FP6 projects:** Noise (PINCHE...), air pollution (PINCHE, AIRNET...), EMF (EMF-NET), endocrine disrupters (INUENDO, ...),
- Opinion papers:** CREDO cluster, Cascade NoE, PEER...
- Workshops:**
 - ✓ Air pollution (2005, 2006)
 - ✓ Climate change and health impacts (2005)
 - ✓ Cancer (2005)
 - ✓ Human biomonitoring
 - ✓ DG INFSO workshop on E&H (2006) etc.
- Programme Committee** of the 'Environment' Directorate
- Consultative Forum** (E&H Action Plan)
- Policy documents:**
 - ✓ E&H Action Plan
 - ✓ Sustainable development strategy
 - ✓ Thematic strategy on air pollution, urban environment
 - ✓ GEOSS 10-year Implementation Plan, etc.

Policy support

Policy	Topic														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
COMMISSION Community Research E&H action plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Sustainable development strategy				✓					✓		✓				
Thematic strategy on air pollution		✓			✓			✓							
Thematic strategy on urban environment		✓			✓			✓					✓		
Community strategy on endocrine disruptors				✓					✓		✓	✓			
GEOSS			✓			✓									
European climate change programme		✓				✓									
REACH	✓			✓					✓		✓	✓			
Programme of Community action in the field of public health								✓	✓	✓		✓	✓		
EU Noise policy								✓					✓		
	1st call						2nd call								



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Prioritisation of topics

Launch cohort studies in the beginning of the FP

Lack or limited coverage in FP6:

- ✓ Air pollution
- ✓ Noise
- ✓ Use of GIS for epidemiological research
- ✓ Environment and cancer

Meeting important policy needs: (most topics)

- ✓ Human biomonitoring in the context of E&H Action Plan
- ✓ Health impacts of non-ionising electromagnetic radiation
- ✓ Health impacts of endocrine disruptors
- ✓ Health impacts of neurotoxicants in children
- ✓ Integrated assessment of urban exposures

Responding to international initiatives:

- ✓ Health impacts of global environmental change
- ✓ GEOSS 10-year implementation plan



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Framework for action: Specific Programme text

Sub-area	Focus
1	Health effects of exposure to environmental stressors
2	Methods and tools to underpin environment and health research including human biomonitoring
3	Delivery of methods and decision support tools for risk analysis and policy development



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Indicative topics for first two calls



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Sub-area 1: Health effects of exposure to environmental stressors

EUROPEAN COHORT ON AIR POLLUTION

FOCUS/AIMS OF RESEARCH



✓ Increase knowledge on both short- and long-term health effects caused by air pollution

Year 1 - Collaborative project



DECLINING REPRODUCTIVE HEALTH: ROLE OF ENVIRONMENTAL FACTORS

FOCUS/AIMS OF RESEARCH



✓ Assess environmental influences on human reproductive health taking into account long latencies of effect following exposures at critical time points and interplay between multiple factors

Year 1 - Collaborative project

ELECTROMAGNETIC RADIATION FROM APPLIANCES: A PUBLIC HEALTH CONCERN

FOCUS/AIMS OF RESEARCH



✓ Carry out epidemiological studies to determine long-term effects (e.g., brain cancer) of radiofrequency radiation on the nervous system in children

Year 2 -collaborative project

NEUROTOXICANTS AND CHILDREN'S HEALTH

FOCUS/AIMS OF RESEARCH



- ✓ Identify biomarkers of exposure, effect and susceptibility to neurotoxicants children are exposed to
- ✓ Consider combined exposures at low doses, long-term neuro-developmental effects

Year 2- Collaborative project



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Sub-area 2: Methods and tools to underpin environment and health research including human biomonitoring

EUROPEAN NETWORK ON HUMAN BIOMONITORING

FOCUS/AIMS OF RESEARCH



- ✓ Improve coordinated approach to human biomonitoring in Europe
- ✓ Extrapolate biomonitoring results to health effects

Year 1 - Network of excellence

INDOOR AIR POLLUTION IN EUROPE: AN EMERGING HEALTH ISSUE

FOCUS/AIMS OF RESEARCH



- ✓ Enrol population samples to perform monitoring of indoor contaminant concentrations and link them to possible disease manifestations
- ✓ New models to estimate indoor air pollution and links to health impacts

Year 1 - Collaborative project



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GLOBAL ENVIRONMENTAL CHANGE: HEALTH AND SOCIO-ECONOMIC IMPACTS OF DROUGHT AND DESERTIFICATION

FOCUS/AIMS OF RESEARCH



- ✓ Use GIS approaches to identify populations with potential exposure to environmental hazards resulting from drought and water scarcity (including desertification and dust storms)
- ✓ Investigate disease outcomes

Year 1- Collaborative project

LONG-TERM HEALTH IMPACTS OF ENDOCRINE DISRUPTING CHEMICALS

FOCUS/AIMS OF RESEARCH



- ✓ Take advantage of advances in toxigenomics and modelling to identify and validate biomarkers of exposure, effect, and susceptibility of relevant endpoints to endocrine disrupting compounds
- ✓ Focus on links between early 'real life' exposure scenarios and disease occurrence later in life

Year 2 - Collaborative project

ENVIRONMENTAL CONTAMINANTS AND CANCER

FOCUS/AIMS OF RESEARCH



- ✓ Improve our understanding of environmentally induced carcinogenesis by developing in silico, cellular and in vivo models to assess responses to environmental chemicals and mixtures
- ✓ Focus on exposure during critical periods of human development, in relation to the occurrence of cancer at sensitive sites during childhood or at later stages of life

Year 2- Collaborative project



MICROBIAL BIOMONITORING SYSTEMS FOR ENVIRONMENTAL QUALITY AND HUMAN HEALTH - Collaborative project

FOCUS/AIMS OF RESEARCH



- ✓ Assess the use of microbial biomonitoring in evaluating impact of hazardous substances on human and animal health
- ✓ Develop first fast line of general screening methods

Year 2- Collaborative project



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Sub-area 3: Delivery of methods and decision support tools for risk analysis and policy development

HIGH-RESOLUTION GEOGRAPHICAL INFORMATION SYSTEMS IN SUPPORT FOR ENVIRONMENTAL EPIDEMIOLOGY RESEARCH

FOCUS/AIMS OF RESEARCH



✓ Stimulate epidemiological and statistical approaches (GIS technology) for elucidating the geographic relationships between environmental exposures, relevant physical measurements, and related diseases (e.g., cancer, infectious diseases)

Year 1 - Collaborative project

ERA-NET FOR ENVIRONMENT AND HEALTH

FOCUS/AIMS OF RESEARCH

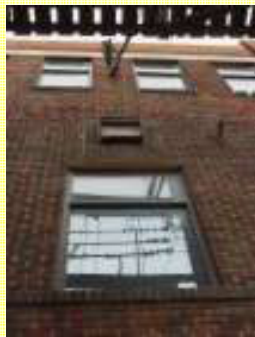


- ✓ Assemble, evaluate and coordinate national programmes in environment and health research in the EU
- ✓ Integrate knowledge on different programmes in view of developing joint activities

Year 1 - ERA-NET

INTEGRATED ASSESSMENT OF URBAN ENVIRONMENT AND HEALTH

FOCUS/AIMS OF RESEARCH

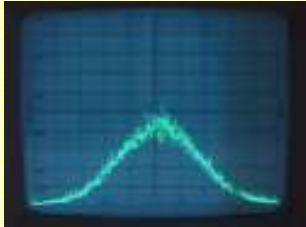


✓ Develop integrated assessment models and methodologies for evaluating cumulative effects, interactions between various stressors (air pollution, noise,...) in the urban environment, and their short- and long-term influence on human health

Year 2 - Collaborative project

NOISE AND CHILDREN'S HEALTH

FOCUS/ AIMS OF RESEARCH



✓ Create a durable network of experts focusing on the long(er)-term effects of noise on children's development and health, taking into account combined effects (air and noise pollution; chemicals and noise), individual susceptibility and latency effects

Year 2 - Network of excellence



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TOXICOLOGY TOOLBOX FOR EUROPE

FOCUS/AIMS OF RESEARCH



✓ Produce a public toolbox and workflow resource to gather and organise toxicity-related data and knowledge of chemical compounds

Year 2 - Specific support action



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Potential topics for later calls



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Airway and atopic diseases

- ✓ Air quality and asthma
- ✓ Indoor air pollution and atopic disease
- ✓ Indoor air and air fresheners: potential health risks

Neurodevelopment

- ✓ Environmental factors and neurological diseases (Parkinson's, Alzheimer's diseases)
- ✓ Role of gene-environment interactions in autism

Reproduction

- ✓ Environmental causes of female infertility
- ✓ Gender differences in endocrine disrupting mechanisms
- ✓ Metal-induced endocrine disruption

Others

- ✓ European children's study: Holistic health risk assessment of exposure to environmental pollutants
- ✓ Nuclear receptors in health and disease
- ✓ Air pollution and cardiovascular disease
- ✓ Environmental influences on thyroid function and implications for human health
- ✓ Environmental pollutants and immune disorders
- ✓ Biophysical and biological mechanisms of the effects of low doses of non-ionising radiation
- ✓ Genetic differences in susceptibility to drugs and environment

Sub-area 1: Health effects of exposure to environmental stressors



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Sub-area 2: Methods and tools to underpin environment and health research including human biomonitoring

- ✓ **Bioinformatics and environmental diseases**
- ✓ **Biomarkers and better sampling methods for indoor air pollutants**
- ✓ **Biomarkers of environmental carcinogens susceptibility**
- ✓ **Biomarkers of effects of electromagnetic fields on humans populations**
- ✓ **Animal models in environmental risk assessment**
- ✓ **Networking of EU biobanks to support environmental and health research**



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Chemicals and combined exposures

Sub-area 3: Delivery of methods and decision support tools for risk analysis and policy development

- ✓ Real life exposures to chemical mixtures: regulatory implications
- ✓ Regulatory framework for risk/benefit analysis
- ✓ Risks and benefits of brominated flame retardants
- ✓ Risk analysis of perfluorooctanoic acid (PFOA)
- ✓ Combined effects of ELF magnetic fields with other physical or chemical agents
- ✓ Environment and health in megacities: exchange of know-how between EU and INCO target countries

Nanoparticles

- ✓ Benefits and potential health risks of nanoparticles

Non-ionising radiation

- ✓ Health effects of combined exposure to EMF and other stressors
- ✓ Health risks of emerging technologies emitting IF electromagnetic fields
- ✓ Studies relevant to assess possible causality between ELF magnetic fields and neurodegenerative disease/brain cancer
- ✓ Risk assessment of Intermediate Frequency (IF) radiation

Global environmental change

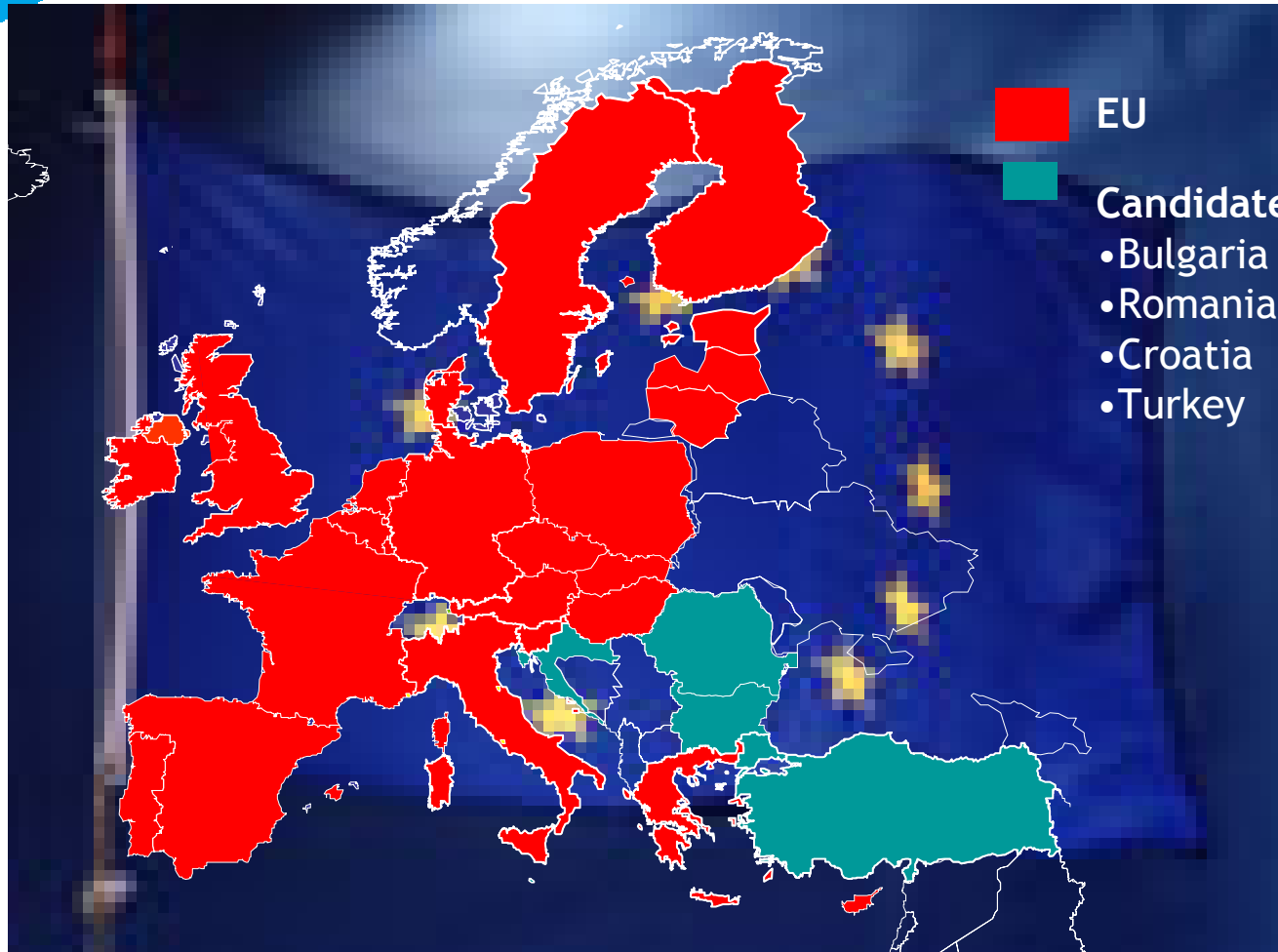
- ✓ Climate change and infectious diseases
- ✓ Better understanding of links between infectious disease and biodiversity



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Thank you for your attention





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Conclusions and next steps



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Support for topics



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Gaps



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Next steps for Workprogramme development

- Inputs from this event taken into account
- Inputs from FP7 Advisory Committee (June 2006)
- Consolidated DG Research-wide workprogramme (July-September 2006)
- Interservice consultation (INFSO, SANCO, ENTR, ENV...) (October-November 2006)
- Launch of first call (end of the year-beginning of 2007)



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Weblink for docs

[http://ec.europa.eu/research/environment/
index_en.htm](http://ec.europa.eu/research/environment/index_en.htm)