WHO First International Conference on

Environmental and Occupational

Determinants of Cancer:

Interventions for Primary Prevention

17-18 March 2011 / Asturias (Avilés and Gijón), Spain

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FINAL MEETING REPORT
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Introduction

Cancer is the second leading cause of death worldwide, after cardiovascular diseases. In 2008, 12.7 million new cases of cancer and 7.6 million deaths due to cancer were reported worldwide. Cancer is not a modern disease, but as cancer risk increases steeply with age, it is more common nowadays partly because of increasing life expectancy. It has been estimated that globally cancer incidence will double between 2000 and 2020, and will triple around 2030 creating a substantial additional burden on health-care systems and costs.

Cancer imposes a substantial burden through long-term human suffering for the affected individuals and their families as well as resulting in an economic impact on active members of society and high costs for health-care systems. Cancer was often considered a disease of westernized, industrialized countries. However, 63% of all cancer deaths occurred in low- and middle-income countries in 2008 and this number is predicted to increase in part because of a rise in life expectancy and the large overall population size in those countries. The total economic impact of premature death and disability from cancer was $895 billion in 2008 not including direct costs of treatment. Only 5% of the global resources for cancer are spent in developing countries. In those countries, cancers are usually detected at advanced stages, when cancer is more difficult to treat, therefore treatment interventions are more costly and less successful. The estimated rise in cancer incidence will have a greater impact on countries that have a low health budget or fragile or absent health systems.

Cancer is a multifactorial disease resulting from a combined effect of genetic and environmental, and arguably behavioural, factors acting concurrently and sequentially. The proportion of cancer cases attributable to modifiable risk factors varies greatly across countries, but is estimated to exceed at least one third of cases. Those cancers could be preventable. A substantial proportion of all cancers are attributable to the environment, including in working settings. Environmental factors that represent risks for the development of cancer typically affect the general population through exposures that cannot be directly controlled by an individual. Carcinogenic effects in human beings result from exposure to radiation, air pollutants, food and water components or contaminants, as well as daily consumer exposure to man-made products. These exposures may occur on multiple occasions and in various settings during the course of a life-time, from households and schools to the working environment. Occupational health risks are also directly related to physical, chemical and biological factors in the environment and are frequently related to passive exposures and behaviours.
Environmental interventions are key for reducing the incidence of cancer, by decreasing exposure to environmental carcinogens, including in occupational settings, by being cost-effective and by contributing to the overall well-being of communities. This requires a broad, public health-driven response engaging all stakeholders in a multi-sectoral, collaborative approach.

In order to stimulate action to tackle known and preventable causes of cancer, the World Health Organization (WHO) organized the First WHO International Conference on "Environmental and occupational determinants of cancer: Interventions for primary prevention", which was held on 17-18 March 2011 in Asturias (Spain). This conference was jointly organized with the International Agency for Research on Cancer (IARC), the Union for International Cancer Control (UICC) and the Fundación Sandra Ibarra de Solidaridad Frente al Cáncer (FSI); and hosted by the Ministry of Health, Social Policy and Equality and the Government of the Principality of Asturias, Spain.

This report summarizes the main strategies and actions discussed to better address the environmental and occupational determinants of cancer that are responsible for hundreds of thousands of deaths each year, so as to develop a policy framework for the primary prevention of environmental- and occupational-related cancers.
Objectives

The main objective of the conference was:

- To define a road map to better address environmental and occupational determinants of cancer, by reviewing the scientific evidence, key policy options and environmental interventions that have proven successful for the primary prevention of various cancers, and identifying gaps and barriers for the promotion of existing interventions of primary prevention; and to mobilize scientific and public health communities, civil society and media.

The specific objectives related to the main goal were:

- to raise awareness about the substantial percentage of cancers that are caused by environmental and occupational risk factors;
- to promote environmental and occupational interventions in support of primary preventive measures;
- to advocate for the integration of primary prevention of environmental and occupational cancers into the global cancer agenda (and the Non-Communicable Diseases (NCDs) agenda);
- to develop partnerships between cancer and environment communities;
- to agree on future steps to build a global strategy on environmental and occupational cancer prevention.

Expected outcomes

1. A set of policy options and effective interventions for the primary prevention of selected causes of cancer.
2. Key messages to the media and the public to raise awareness about environmental and occupational causes of cancer.
3. Establishment of a coordinated network of institutions for primary prevention of environment-related cancer, involving scientific experts, professional societies, non-governmental organizations (NGOs), academic and governmental institutions, media and others.
Meeting proceedings

More than 100 participants from 15 countries from all WHO regions gathered in Asturias to address the problem that a substantial percentage of all cancers is caused by environmental and occupational exposures that can be prevented, and to agree on and release the “Asturias Declaration: A Call to Action”. Leading experts in cancer, environment, occupational health, public health, behaviour specialists, together with representatives of governmental and non-governmental institutions, health-care professionals and journalists spent two days discussing the problem in workshops and round tables open to participation by all meeting participants.

This two-day conference was arranged as follows:

- on Thursday 17 March, a number of workshops with international scientific experts took place to discuss and agree on a series of recommendations to develop public health policies for primary prevention of cancer through environmental and occupational interventions;
- on Friday 18 March, a series of round tables was scheduled with policy-makers and government representatives, representatives of civil society, NGOs and advocacy groups, trade unions, the private sector, professional associations and cancer networks, including patient groups, and media, to define common messages for the primary prevention of cancer and to identify barriers to implementing environmental and occupational interventions and how to overcome them.

The conference was opened by H.R.H. Princess of Asturias, who is the Honorary President of the Spanish Association Against Cancer (AECC), and the Minister of Health of Spain. The event attracted significant political and media interest.

During the introductory session, Dr María Neira set the scene by outlining the main environmental and occupational risks as important determinants of cancer and other NCDs. An astonishing lack of awareness about the preventable environmental and occupational determinants of cancer among the general public and politicians was underscored, as well as a lack of political will in some areas, due partly to an underestimation of the burden of environmentally-induced cancers. People continually face combinations of carcinogenic exposures, even before birth. The need for specific protection and monitoring measures for children, pregnant women and other vulnerable populations was emphasized. In certain cases, despite the availability of interventions to reduce environmental and occupational exposures, insufficient action is being taken to implement existing strategies. The capacity of Member States
requires strengthening to address effectively the environmental and occupational determinants of cancer and to promote existing and innovative approaches to support primary prevention of environmental and occupational cancers.

The fact that the main focus in cancer control is treatment and secondary prevention was highlighted. This is unsustainable, especially in low- and middle-income countries. Moreover, there is almost no awareness about cancer risk due to environmental and occupational exposures in those countries. Participants argued for a change of paradigm to primary prevention as a fundamental principle of cancer control, raising political awareness that cancer control is not only about treatment. Innovative ways for investing in primary prevention and identifying new ways of collaboration are needed. National cancer plans should address prevention or reduction of environmental and occupational risks as part of frameworks of action.

The workshops were structured around learning examples. Some of the topics discussed at the conference were: asbestos and cancer as an example of environmental health policies and measures taken at governmental and policy-maker level and identification of barriers for implementation; UV exposure as an example of interventions targeting individual behaviour jointly with governmental regulations (such as in the case of sunbeds), and the power of social mobilization and communication; some other examples were related to the process of policy decision-making at times of uncertainty as well as risk perception on the part of the general public. The round tables tackled subjects associated with implementation and communication, such as: early action on limited evidence, barriers to implementation in resource-limited countries, strategies to introduce environmental and occupational aspects to the global cancer agenda, approaches to increase social and political awareness to promote policies for primary prevention of cancer, and involvement of civil society and media.

The main issues raised across workshops and round tables during the two-day conference were the following:
1. **Primary prevention of cancer is not yet well addressed in the political agenda**

   Now is the right time to create the political momentum and to convince decision-makers that the most valuable and cost-effective approaches to reducing cancer burden lie in primary prevention. Primary prevention is the main strategic area of governmental actions for development and sustainability. The benefits of reducing environmental and occupational exposure to carcinogens go beyond cancer as there are synergies with prevention of other NCDs. For example, mortality due to ischemic heart disease decreased soon after smoking bans were introduced. The ban on smoking in public places prevents millions of workers from being exposed to second-hand smoke and the development of related diseases. Health and primary prevention should be included in all policies. For example, the US Clean Air Act demonstrated economic and health benefits of implementation of clean air interventions by the US Environmental Protection Agency (EPA). By enforcing the Clean Air Act, air pollution is reduced, decreasing the burden of cancer and other diseases due to air pollution, and at the same time CO$_2$ is also reduced, contributing to the mitigation of climate change. It was also stressed that if one wishes to prioritize interventions, then the wider those interventions, the better.

   Through Health Impact Assessment (HIA) we are able to evaluate policies by quantifying the benefits of sectoral interventions. HIA tools can ensure that environmental and occupational risks are taken into account in policy decisions. A global governance structure for HIA may help to reach agreement when dealing with other sectors, for example, in tackling climate change. Given the high economic burden imposed by cancer, economists should also be involved in strategies aiming at preventing the increasing burden of cancer. This will help political awareness to be increased. A fundamental debate in societies is needed about the value of health. Thus more awareness is needed to deal with health strategies to achieve healthy people.

   Furthermore, although the basic unit of prevention is a country because it has governmental mechanisms for policy and regulation, a view was expressed that by introducing a legally-binding international instrument (on global health) one may be able to create a framework for global actions against cancers, involving international organizations not directly related to health (for example, the World Trade Organization). A successful example of a global legal framework is the WHO Framework Convention on Tobacco Control (FCTC), which has set the agenda for changes at national level, including regulatory actions.
Two high-level meetings, the First Global Ministerial Conference on Healthy Lifestyles and Noncommunicable Disease Control held in Moscow in April 2011, and the United Nations General Assembly High-level Meeting on the Prevention and Control of Noncommunicable Diseases in September 2011, presented and will present, respectively, opportunities to synergize with the UN global agenda for control of NCDs and to put forward primary prevention as a main strategic area for the development agenda of governments.

2. **We know enough to start to act**

Historically, there has typically been a delay between the establishment of scientific evidence and action taken to reduce exposure to environmental and occupational risks. A limited amount of research has been translated into cancer primary prevention policies against environmental and occupational risks. The learning example on asbestos showed the importance of translating science to political options; however, in spite of the strong evidence and the availability of interventions, policies and legislation, asbestos is still used in many countries. Insufficient action is also taken against other environmental and occupational risk factors for which there is significant evidence. Some barriers identified were an insufficiency of feedback on positive interventions and best practices, difficulties in obtaining data on the effect of interventions, certain economic barriers and a lack of political will and awareness. It was argued that accumulated evidence and best practices should be synthesized by WHO to provide a basis for interdisciplinary action and implementation at international, national and local level. Another barrier identified was legislative, regarding a lack of compliance with current laws for elimination or substitution of carcinogens, and protective measures for workers, as well as the substantial percentage of carcinogenic products unidentified and still used in industries.

Additionally, while it was agreed that knowledge is critical because knowing the causes of cancer allows primary prevention, action is also compatible with certain levels of uncertainty. Lack of full scientific certainty should not be an obstacle to taking action through cost-effective measures.

On the other hand, more research on cancer linked to environmental and occupational factors is needed, because of i) the large number of environmental hazards that remain unstudied, ii) the under-researched consequences of cumulative lifetime exposure to known and possible carcinogens and the interaction of multiple concurrent exposures, iii) a lack of knowledge on the impact of environmental and occupational exposures in low- and medium-income countries, with possibly higher exposure levels or higher life-time exposure, lesser protection levels, or different exposures compared to high-income countries providing the majority of data, iv) cancers for
which few risk factors have been identified so far and the environmental component might be significant. Further, focused research is needed in low- and middle-income countries, because of globalization of economies and markets moving to such countries. Therefore, research on environmental and occupational causes of cancer requires a high priority in the cancer research agenda.

3. Communication

There is a need for appropriate communication strategies to pass the scientific and political messages to society. The message that cancer has environmental and occupational causes is clear among the scientific community but sometimes neglected outside; there are also several examples of misinformation about what can be achieved in terms of primary prevention of cancer by applying for instance measures for worker protection or contributing to a cleaner environment. Media have a key role in disseminating messages to inform populations, to increase public risk perception, to educate people in general and to target groups to change their habits and to generate awareness to prompt demand from civil society to politicians. Supporting campaigns and creating conditions to facilitate behavioural change is essential, but it should be combined with collective measures. In occupational health, arguing only for education of workers and behavioural change will not be sufficient; international regulation of hazards is also needed.

Communication is the best mean to raise awareness on the part of and to influence people. Collaboration with the media is essential, as well as the identification of positive, clear and understandable messages that can be identified by media and the public as their own messages: for example, that primary prevention is the only form of prevention that reduces the incidence of disease.

In addition, effective communication with national decision-makers requires formulation of new indicators of well-being to measure the benefits of primary prevention. WHO was requested to build a set of indicators of exposure, harm and benefit to estimate the impact of measures taken, to assess progress and to raise awareness, and also that it should encourage countries to collect pertinent data and build their own cancer registries. Benefits should be measured not only in terms of productivity, but as health, social and environmental benefits. An example of this was the phasing out of lead from gasoline: the economic benefit of this action was billions of dollars per annum, but also human benefits were measured showing an increase in the intelligence quotient of an entire generation of children. This in turn brought economic benefit, because higher intelligence increases productivity and innovation.
The importance of capacity building and education was also highlighted, to better educate health professionals to recognize cancers due to environmental and occupational exposures. Current knowledge of environmental and occupational determinants of cancer is very limited among health professionals, and the potential for primary prevention of cancers through healthy environments is not fully appreciated. A general debate about the value of health should take place particularly within the health sector. Health professionals should be leaders in primary prevention and communication.

4. Multi-sectoral approach

Cancer and NCDs in general are found in all types of economic sector and activity, therefore the importance of establishing a multi-sectoral approach and partnerships to undertake primary prevention. Actions on the part of health and non-health sectors, such as environment, occupational, housing, industry and trade, and by community organizations, private enterprises, and other key actors at national and international level are needed to reduce environmental and occupational exposures and they should all be involved in primary prevention. Governments and NGOs are best positioned to change the situation, and governments should support WHO's leading role in primary prevention of cancer and other NCDs. Arguably, WHO and other international organizations have influence over governments and should establish a dialogue with industry and economic corporations to reduce the production of carcinogens. On the other hand, corporations themselves should adopt protection standards and should be made accountable for actions potentially affecting health. The role of trade unions is also important to accomplish a transition to clean industry. Additionally, the media should be involved in the dissemination of information in a collaborative manner. For example, research is supported by citizens through taxes and therefore the purpose and results deserve proper communication. Finally, there is a call on scientists to be involved in policy development and implementation. The current difficulties in coordination of all actors involved in implementation, such as different Ministries: Health, Environment, Labour, Agriculture, Industry, Finance, etc., underlines the importance of a multi-sectoral approach to primary prevention of cancer and other NCDs.

A successful example of a joint venture has been the creation of the CAREX (CARcinogen EXposure) database in the European Union, which provides selected exposure data and documented estimates of the number of exposed workers by country, carcinogen, and industry. The success of this lay in multidisciplinary and community involvement.

Similarly, enhancing national and international cooperation mechanisms between stakeholders would help to develop partnerships and networking within and between developed
and developing countries. WHO should work with countries to support primary prevention in low- and middle-income countries by protecting against exposures to chemicals that are banned in the developed world, by promoting the ratification and adoption of international instruments such as the Rotterdam Convention.
Recommendations

• Shifting the paradigm to primary prevention in cancer control as a fundamental principle at global, national and regional level;

• Combining of political agenda (NCDs, environment, etc.) may bring co-benefits to the prevention of other diseases besides cancer. Primary prevention of environmental and occupational causes of cancer and other NCDs should be included in all health policies;

• The use of Health Impact Assessment (HIA) tools may enable the evaluation of policies to quantify health benefits and economic impacts of interventions;

• To search for and develop indicators of exposure to environmental and occupational determinants of cancer and attached cancer burdens to guide surveillance of primary prevention of cancer, and to facilitate communication with policy-makers;

• The WHO Framework Convention on Tobacco Control was regarded as a good example for the development of an international legal framework on prevention of environmental and occupational causes of cancer based on proven and probable carcinogens, as identified by IARC;

• The use of easy-to-understand messages (such as reminding the general public that primary prevention is not the same as secondary prevention, or that individual behaviour is also related to the environment) and to educate populations about environmental and occupational causes of cancer and preventive strategies;

• The creation of a multi-sectoral approach for primary prevention of environmental and occupational causes of cancer and to identify new ways of collaboration;

• To enforce research into the impact of environmental and occupational exposure on cancer burdens, specifically with respect to under-researched agents, cancers and countries.
Conclusions

The Conference recommendations and agreed action items are listed below:

1. Participants in the WHO First International Conference on Environmental and Occupational Determinants of Cancer: Interventions for Primary Prevention agreed on key elements for the development of a future global strategy on primary prevention of environmental and occupational determinants of cancer. This was highlighted in the "Asturias Declaration: A Call to Action".

2. The Asturias Declaration was and is intended to assist in the creation of political momentum and synergize with thinking at subsequent high-level meetings on NCD control: the First Global Ministerial Conference on Healthy Lifestyles and Noncommunicable Disease Control which was held in Moscow in April 2011, and the United Nations General Assembly High-level Meeting on the Prevention and Control of Noncommunicable Diseases to take place in September 2011, respectively. These events represent the most appropriate opportunities in the near future to raise awareness about the importance of introducing primary prevention into the UN global agenda for control of NCDs.

3. A short core message on primary prevention of environmental and occupational risks needs to be concrete and to ask for very specific actions to be proposed in the preparatory documentation to be submitted to the high-level meetings mentioned above.

4. WHO is best positioned as a global convener to establish a dialogue among public and private stakeholders.

5. WHO should play a key role as a depositary of scientific evidence to provide a basis for interdisciplinary actions, environmental health norms, indicators, best practices, etc. to translate experiences that work to facilitate implementation; and in communication.
Annex 1: Asturias Declaration: A Call to Action

Twelve million cancers are diagnosed each year worldwide, and each year over 7 million people die of cancer. The majority of all cancers occurs in low- and middle-income countries, and this proportion is increasing. A substantial percentage of all cancers is caused by environmental and occupational exposures. Pregnant women, fetuses, infants, children and workers are especially vulnerable.

Many cancers caused by environmental and occupational exposures can be prevented. Primary prevention — prevention of the exposures that cause cancer — is the single most effective means of prevention. Primary prevention keeps cancer from ever occurring. Primary prevention saves lives and saves billions of dollars. Primary prevention depends absolutely on independent, publicly-funded research on environmental and occupational causes of cancer.

The Asturias Declaration calls for the primary prevention of environmental and occupational cancer in countries around the world. The following are key recommendations:

1. Prevention of the environmental and occupational exposures that cause cancer must be an integral component of cancer control worldwide. Such prevention will require strong collaboration across sectors — the health, environment, labour, trade and financial sectors and among countries, and also with civil society and the media.
2. WHO to develop a global framework for control of environmental and occupational causes of cancer that concentrates on occupational and environmental causes of cancer identified by IARC as proven or probable carcinogens.
3. WHO to lead development of measurable indicators of exposure and disease to guide cancer surveillance in countries around the world.
4. All countries to adopt and enforce legislation for protection of populations, especially the most vulnerable populations, against environmental and occupational cancers.
5. All countries to develop communication campaigns that educate populations about environmental and occupational causes of cancer and about preventive strategies.
6. Corporations to comply with all rules and regulations for prevention of environmental and occupational cancers and to use the same protective measures in all countries, developed and developing, in which they operate.
7. Research to discover still unrecognized environmental and occupational causes of cancers so as to guide future prevention.
## ANNEX 2: List of Participants

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