Attachment #3

From: Larry Stoffman
To: ab.miller@sympatico.ca ; amcdonald@bc.cancer.ca ; katz@cc.umanitoba.ca ; deb.keen@cancercare.on.ca ; eevayda@rogers.com ; hlogan@cancer.ca ; Judith.Purcell@ccns.nshealth.ca ; aronson@post.queensu.ca ; robert.strang@cdha.nshealth.ca ; cameron@healthy.uwaterloo.ca ; bernierr@fondationchagnon.org ; kaminsky@bc.cancer.ca ; dmclean@bccancer.bc.ca ; ellen.murphy@cancerboard.ab.ca ; jharvey@cdpac.ca
Cc: hans@krueger.bc.ca
Sent: Sunday, April 01, 2007 6:52 PM
Subject: Re: Attributable Risk RFA

Thanks for your comments, Tony. I agree that the rfa is broad enough in scope to address PAR for other risk factors which we do have appropriate data for. I previously revised my suggestions to Barbara as per below. In fact, now I agree with you that not any funds from the PAR pot go into the CAREX project. It is not necessary. I have previously proposed that developing a comprehensive paper on PAR for O/E factors be coordinated with the gathering and centralization of data through the carex work. I further proposed that we use part of the NCEOE budget to fund developing a discussion paper on these areas, which would "demonstrated recognition of these sort of problems, and proposed workable solutions", as you said.
My other comments of course remain.
Thanks again.
Larry

"Barbara,regarding the $100,000 set aside for the RFA:

My comments applied to the O/E portion of the work only. Therefore one could conceivably go ahead with the rfa for other risk factors where there is better data to work with (nutrition, lifestyle factors) . Leave the O/E areas aside, and proceed to develop that end as I proposed below. If this amounts to a portion of the $100,000, for example $ 30,000, add that to the deliverables for the carex projects. (Please disregard this, Tony....as per my comment above.)
Thanks,,"

----- Original Message -----
From: <ab.miller@sympatico.ca>
To: <larryst@shaw.ca>; <amcdonald@bc.cancer.ca>; <katz@cc.umanitoba.ca>; <deb.keen@cancercare.on.ca>; <eevayda@rogers.com>; <hlogan@cancer.ca>; <Judith.Purcell@ccns.nshealth.ca>; <aronson@post.queensu.ca>; <robert.strang@cdha.nshealth.ca>; <cameron@healthy.uwaterloo.ca>; <bernierr@fondationchagnon.org>; <kaminsky@bc.cancer.ca>; <dmclean@bccancer.bc.ca>; <ellen.murphy@cancerboard.ab.ca>; <jharvey@cdpac.ca>
Cc: <hans@krueger.bc.ca>
Sent: Saturday, March 31, 2007 11:51 AM
Subject: Re: Attributable Risk RFA

>I have considerable sympathy with Larry's desire to have better exposure
> measurements in the areas of occupation and the environment. But is it so
> that CAREX development can not proceed with the resources available to PPAG
> without using the funds allocated to PAR development? I would have thought
> that both are possible.
>
> It is certainly true that to develop priorities for cancer prevention we
> need better estimates of PAR. However, as implied by the recent WHO
> document, and the earlier attempts by IARC to address this issue (in Vol 100
> IARC Scientific Publications, Cancer Causes, Occurrence and Control, 1990)
> these vary substantially according to extent of occupational exposure and
> environmental contamination, and also need to take account the changes in
> these exposures with time. Thus the sort of simplistic calculations I have

> performed in the past will not suffice even for determining PAR for now, let
> alone what we can expect in the future. Further, they are bound to vary
> substantially across Canada, and not just at the provincial level.
>
> Thus I wonder whether this RFP is broad enough in scope, and also whether it
> should be integrated with what the QPA-AG plans, in terms of projection
> modeling. I can see it providing useful input to our planned endeavors,
> but I would hope a proposal would only be funded if the applicant
> demonstrated recognition of these sort of problems, and proposed workable
> solutions.
>
> Tony
>
>
>>From: Larry Stoffman <larryst@shaw.ca>
>>To: Alma McDonald <amcdonald@bc.cancer.ca>, <ab.miller@sympatico.ca>,
>>katz@cc.umanitoba.ca, deb.keen@cancercare.on.ca, eevayda@rogers.com,
>>hlogan@cancer.ca, Judith.Purcell@ccns.nshealth.ca, Kristan Aronson
>><aronson@post.queensu.ca>, robert.strang@cdha.nshealth.ca,
>>cameron@healthy.uwaterloo.ca, bernierr@fondationchagnon.org, Barbara
>>Kaminsky <kaminsky@bc.cancer.ca>, dmclean@bccancer.bc.ca,
>>ellen.murphy@cancerboard.ab.ca, jharvey@cdpac.ca
>>CC: Hans Kruger <hans@krueger.bc.ca>
>>Subject: Re: Attributable Risk RFA
>>Date: Fri, 30 Mar 2007 15:48:16 -0700
>>
>>Here is a copy of my response to Barbara earlier today. In a nutshell, I am
>>proposing that the RFA be significantly revised. The data collection we
>>plan through the CAREX project, when applied with the WHO methodology for
>>calculating national AF's in occupational cancers needs to take place in
>>order for any discussion of AF in Canada to have significant meaning. The
>>data for other factors, eg.' lifestyle' ones, may be sufficient to proceed
>>with this rfa for those areas. I am proposing the O/E AF work proceed in
>>conjunction with and collaboration with the CAREX O/E Project.
>>This is very important. My comments below expand on this:
>>
>>Hi Barbara,
>>
>>
>>
>>I have read over the draft. Unfortunately I am still at least as critical
>>as before, perhaps more so.
>>
>>As per Kristan Aronson's criticism, the approach appears the same. As she
>>indicated earlier:
>>
>>
>>
>>"I have a major philosophical/methodological argument with the attributable
>>risk approach: when used vis-a-vis single risk factors, it is too
>>simplistic, does not take into account multiple factors causing cancer
>>together, etc. This is captured by Clapp, Howe, Lefevre 2005 report.
>>
>>Kristan went on to recommend that Clapp 2005 be referenced in any framework
>>for an RFA. I would add that the WHO approach be also referenced as a basis
>>for estimating AR at the national level.

>>
>>The methodology is well formulated in the WHO guide, referenced below, and
>>AR's given for common occupational cancers are also given below.
>>
>> I would think that the framework for an RFA,(and this is not to say that
>>I agree with one at this time, as I think it premature for a number of
>>important reasons which I will touch on below), would also at least refer
>>to the many critiques of AR estimates in the past, and the misuse of
>>Doll/Peto and Harvard estimates, as explained by Paul Demers in an earlier
>>email exchange.
>>
>>
>>
>>Unfortunately none of the above are incorporated into the proposal.
>>
>>To put it bluntly, I think proceeding with this RFA now would be a waste
>>of money and counterproductive as it fails to take into account the real
>>opportunity we have to develop more evidence based estimates over the next
>>5 years. Let me explain:
>>
>>A careful reading of the WHO guide lays out the method for calculating AR .
>>The data required is largely derived from CAREX estimates of numbers
>>exposed to IARC carcinogens.:
>>
>>Exposure at national level is estimated using workforce data for the
>>country, as well as exposure data for carcinogens in different industries (based on European
>>data).
>>
>>The relative risk for cancer for each carcinogen is estimated from
>>international literature. This information is combined to estimate the impact in each
>>country of occupational exposures to carcinogens. This figure is termed the population attributable fraction (AF), and AF estimates are presented as fractions of the deaths and disability that are caused by occupational exposures to carcinogens. The number of deaths attributable to the occupational exposures to carcinogens can then be estimated by multiplying the AF by the number of deaths in the country. The extent of disability can also be estimated by multiplying the AF by disease-specific estimates of DALYs."
>>
>>Using Carex estimates, risk ratios derived from the literature, and estimates of exposure differentiating developed economies from developing economies (assumption: 90% of exposures are rated "low" in developed countries), AF formulae, and national data re cancer deaths, estimates of actual cases attributable to exposure are derived. Where national caner databases, and exposure data bases exist, these can used instead of CAREX estimates.
>>
In Canada we do not have the CAREX data as of yet. Neither do we have national cancer registries nor exposure databases. We are about to embark on that project. Demers' proposal will go even further, and estimate levels of exposure when possible, based on actual monitoring data. Any estimate of AF due to exposures in Canada not taking into account this information would not be worth the effort, and will not be taken seriously. On the contrary it will be strongly critiqued. (Relying on compensation data for cancer cases , a common error, will likely underestimate cases by 90%...for example). In contrast to this, we have an opportunity to actually identify AF in Canada in a relatively robust way, applying the WHO guidelines to real Canadian data that we are about to have collected. This is why this RFA is premature, and it fails to take into account a much better opportunity to develop AF estimates over the next five years.
>>
>>Similar arguments are to be made for environmental AF. The CAREX proposal will also seek to address estimates of environmental exposures to relevant carcinogens. Data such as the NPRI, municipal air pollutant data, and other sources of data will be used to try to estimate CAREX

(environment). Again, it might be possible to use a similar methodology as WHO re occupational AF. This is an area of discussion I leave to scientists such as Paul and Kristan to discuss. My point is that it would be much more useful to CCS and NCIC to coordinate this work with the collection of data in CAREX , in order to come up with more sophisticated estimates , that can take into account some real exposure estimates that currently do not exist, and which take into account a number of issues and confounders that have historically not been addressed.
>>
I strongly recommend than the $ 100,000 be added to the CAREX project budget, with an additional deliverable regarding AF's.
>>
>>(I subsequently corrected this....and referred only to the O/E portion of
>>the RFA, with a suitable $ revision---LS)
>>
>>The WHO approach is pasted below for information.
>>
>>(Please forward these comments to the rest of the group.)
>>
Thanks,

>>Larry
>>Occupational Cancer
>>Ivan D. Ivanov, Occupational Health
>>Programme, WHO, Geneva, Switzerland
>>
>>(ivanovi@who.int)
>>
>>and
>>
>>Kurt Straif, International Agency for
>>Research on Cancer, Lyon, France (IARC)
>>(straif@iarc.fr)

>>Definition of the problem
>>
>>Occupational cancer accounts for about 4 to 20% of the cancer cases. It affects certain groups of the society much more than others. Furthermore, occupational risks for cancer are taken involuntarily, as opposed to some major lifestyle risks. Occupational cancer is entirely preventable and interventions at the workplace can save millions of lives every year.
>>
>>How to assess the extent of the problem
>>
>>The estimates of the proportion of cancer deaths in the general population attributable to occupational exposures in developed countries are in the range of 4-20% (1, 2, 3, 4, 5, 6, 7). Lung cancer, mesothelioma, and bladder cancer are the most common types of occupational cancer. Occupational cancers concentrate among specific groups of the working population. For these people the risk of developing a particular form of cancer may be much higher than for the general population. For example, an estimate of 3% of total cancer deaths due to occupation in the general population may increase to 12% in the very broad category of male blue-collar workers and up to 80% among populations exposed to carcinogens (7).
>>
>>The WHO "Global Burden of Disease" study carried out in 2002 showed that about 20-30% of the male and 5-20% of
>>
>>1 For more information about DALYs see
>>http://www.who.int/healthinfo/boddaly/
>>

>>en/index.html
>>
>>cancer. There are synergistic effects between some occupational carcinogens and lifestyle factors, for example, occupational exposure to asbestos increases dramatically the likelihood of tobacco smokers to develop lung cancer. The main occupational causes and the proportion of cancer deaths (population attributable risk) determined by occupational factors are shown in table 1.
>>
>>the female working-age population (people aged 15-64 years) may have been exposed during their working lives to lung carcinogens, including asbestos, arsenic, beryllium, cadmium, chromium, diesel exhaust, nickel and silica. Worldwide, these occupational exposures account for about 10.3% of cancer of the lung, trachea, and bronchus. About 2.4% of leukaemia is attributable to occupational exposures worldwide. Occupational cancer results in 1,4 millions of disability-adjusted life-years (DALYs), primarily in countries from the Western Pacific and Europe, followed by South-East Asia and the Americas(8).
>>
>>WHO has developed a special guide to facilitate countries to carry out national estimates of occupational cancer (see "Occcupational Carcinogens: Assessing the Environmental Burden of Disease at National and Local level," WHO, Geneva,2004). This guide provides practical advice for assessing the burden of disease from past and current occupational exposures to carcinogens, particularly about lung cancer, leukaemia, and mesothelioma.>
>>
>> ----- Original Message -----
>> From: Alma McDonald
>> To: ab.miller@sympatico.ca ; katz@cc.umanitoba.ca ;
>>deb.keen@cancercare.on.ca ; eevayda@rogers.com ; hlogan@cancer.ca ;
>>Judith.Purcell@ccns.nshealth.ca ; Kristan Aronson ;
>>robert.strang@cdha.nshealth.ca ; cameron@healthy.uwaterloo.ca ;
>>bernierr@fondationchagnon.org ; Barbara Kaminsky ; dmclean@bccancer.bc.ca ;
>>ellen.murphy@cancerboard.ab.ca ; jharvey@cdpac.ca ; larryst@shaw.ca
>> Cc: Hans Kruger
>> Sent: Friday, March 30, 2007 3:24 PM
>> Subject: FW: Attributable Risk RFA
>>
>>
>> Sent on behalf of PP-AG Chair Barbara Kaminsky.

>> Would you please send your comments to Barbara (kaminsky@bc.cancer.ca)
>>as soon as you are able to do so?
>>
>> Thank you,
>>
>> Alma
>>
>> Alma McDonald
>> Assistant to the Executive Office
>> Canadian Cancer Society BC and Yukon Division
>> 565 West 10th Avenue, Vancouver, BC V5Z 4J4
>> Direct Line: 604.675.7117
>> Fax: 604.675.7336
>> amcdonald@bc.cancer.ca
>> www.cancer.ca
>>
>>
>> From: Michael Fraser [mailto:MFraser@cancer.ca]
>> Sent: Thursday, March 29, 2007 6:59 AM
>> To: Barbara Kaminsky; Barry Kramer; Heather Bryant; Lori Moser; Michael
>>Fraser; Pamela Goodwin

>> Subject: Attributable Risk RFA
>>
>> Hello everyone,
>>
>> Please find attached an edited version of the Attributable Risk RFA. I've taken your comments (and some of my own) and incorporated them into this document. Please let me know your comments/concerns. Once we have a good consensus, we can begin the process of distributing the RFA.

>> Also find attached the minutes of our teleconference.
>>
>> Thanks,
>>
>> Michael
>>
>> Michael Fraser, Ph.D.
>> Senior Project Manager
>> Public Affairs and Cancer Control
>> National Cancer Institute of Canada
>> 10 Alcorn Avenue, Suite 200
>> Toronto, Ontario M4V 3B1
>> P: (416) 934-5977
>> F: (416) 961-4189
>> mfraser@cancer.ca

Attachment #6

National Committee on Environmental and Occupational Exposures (NCEOE)

Summary of Follow-up Work Required Following December 11th, 2006 Meeting

1. Update 5 Year Financial Plan

The original 5 year financial plan (see below) was completed under significant time pressures with the assumption that a proportion of the funds would need to be spent in fiscal 2006/07. Current indications are that funds will become available in fiscal 2007/08, with an equal amount received over the five year time period to 2011/12. This will allow the NCEOE to fine-tune it's financial plan in the context of an allocation of $9.96 million between 2007/08 and 2011/12.

PP-AG 5 Year Strategic Plan - Overview

Resource Allocation

	Fiscal Year 2006/07	2007/08	2008/09	2009/10	2010/11	5 Year Total $	Attach. #
Cancer Specific							
Occupational / Environmental Exposures							
O & E Carcinogen Exposure Unit (CAREX)	$ 421,300	$ 716,800	$ 734,932	$ 750,789	$ 764,574	$ 3,388,395	13
Community Networks	$ 48,750	$ 355,000	$ 605,000	$ 855,000	$ 1,105,000	$ 2,968,750	14
National Symposia	$ 38,750	$ 337,500	$ 337,500	$ 337,500	$ 337,500	$ 1,388,750	15
O & E Patient History Program	$ 37,500	$ 275,000	$ 275,000	$ 275,000	$ 275,000	$ 1,137,500	16
Toxic Use Reduction Strategy	$ 68,750	$ 118,750	$ 118,750	$ 118,750	$ 118,750	$ 543,750	17
Policy Development	$ 58,750	$ 117,500	$ 117,500	$ 117,500	$ 117,500	$ 528,750	18
O & E Subtotal	**$ 673,800**	**$ 1,920,550**	**$ 2,188,682**	**$ 2,454,539**	**$ 2,718,324**	**$ 9,955,895**	
Overall Total	**$ 8,220,000**	**$ 8,220,000**	**$ 8,220,000**	**$ 8,220,000**	**$ 8,220,000**	**$ 41,100,000**	

** Note: the 2006/07 fiscal year is from January to March of 2007.*

2. Providing Financial Support for NGOs Working in This Arena
   - Establish a working group to accomplish the following:
     - Inventory of all appropriate community based organization
     - Define criteria for projects that will be funded and the types of organizations that could be funded. *Note that the PPAG is meeting on Jan 30 and will discuss this.* ***Larry / Hans*** *will provide relevant feedback.*
     - The working group is to consist of **Hans K.** (to organize), **Heather L.**, **Munira L.** **Sue MH.**, **Sarah M.**, **Mae B.**
     - In addition, NCEOE will participate in NGO conferences re: primary prevention as the opportunity arises Larry to present at the *Prevent Cancer Now Conference* (May 24-27, 2007), and to the BC Government and Services Employee Union Conference (March '07).

3. O&E Carcinogen Exposure Unit (CAREX)
   - **Paul D.** to update the CAREX plan in the context of the new funding information.

4. Toxic Use Reduction Initiatives
   - Identify and compile a scan of toxic use reduction initiatives and recommend support / collaboration with emerging projects.
   - Prepare and send a letter of support re: Toronto bylaw.
   - Establish an electronic network of TUR expert contacts

- Begin process of working on a background policy paper on emerging issues linking TUR to primary cancer prevention. (This policy paper might draw on a best practices review and a compilation of existing documentation regarding TUR and primary cancer prevention.) Link with NCIC initiative(s) underway on endocrine disrupting chemicals and their link to cancer.
- Revise/update the five year financial plan for toxic use reduction strategy.
- **Andrew K.** to coordinate the above projects and recommend next steps in policy paper development e.g. RFP, external consultant, or internal committee prep.) Other interested committee members are asked to contact Andy to assist in this subgroup.

5. WHMIS National Office MSDS National Audit
   - **Larry** and **Paul** to attend two day planning conference on February 7-9.
   - Based on input / feedback at this conference, **Larbi** is to prepare a detailed plan including costs. The plan should include potential partnerships with NGOs such as the NCEOE and what resource and financial contributions might be required. The plan would be discussed at the next NCEOE meeting re: potential participation of the NCEOE.
   - **Larry** and **Larbi** to coordinate. Roland to be asked to participate if available

6. Occupational History & Medical Education
   - *Please note that the broader issue of primary care practitioners and their involvement in cancer prevention will be discussed at the Jan 30th PPAG. Decisions at that meeting may influence the current plans of the NCEOE in this area. Feedback will be provided by **Larry / Hans** after the Jan 30th meeting.*
   - At the December 11th meeting of the NCEOE discussion focused on the need to precipitate change in medical education and the taking of exposure histories at the level of the family physician, institutions and the community.

     - *Family physicians* – **Alan** to work with **Gary**, and liaise with **Alan Katz** (PPAG) to develop a proposal for disseminating educational materials and exposure checklists to family physician networks and organizations.
     - *Institutions* – NCEOE wants to link with BC E&O WG developing a national discussion document on options for the systematic collection of occupational histories, pros/cons, partners, stakeholder options. **Paul** to update BC O/E project and present for NCEOE support/discussion.
       Another activity is to explore use of electronic forms for tracking exposure histories. (Project Lead: **Larbi** *Health InfoWay* project?).
       Munira to work with **Andy, Gary, Alan** and **Rick Gallagher** to review current institutional initiatives re: the collection of occupational history data and linking this with family physicians and to develop a proposal for methods.
     - *Community-based approaches* - **Jim** to develop a proposal re: tracking exposure histories using participatory exposure mapping for discussion at the next NCEOE meeting

7. **Larry** and **Paul** will meet with Health and Environment Canada scientists to discuss labelling of carcinogens, risk assessment issues, and the emerging issues of epigenetic carcinogens and the NCIC preparation of a document addressing EDC's and cancer. (Feb 07 Ottawa).

8. Support for consumer labelling initiatives in Ontario and BC (**Andy, Larry, Mae**)

National Occupational and Environmental Carcinogen Surveillance Unit Proposal

Paul A. Demers and Anne-Marie Nicol

School of Occupational and Environmental Hygiene
and Centre for Health and Environment research

University of British Columbia, Vancouver

Prepared for:

Canadian Partnership Against Cancer Corporation

April 18th, 2007

DRAFT

Table of Contents

DRAFT

Introduction

Cancers caused by environmental and occupational exposures represent a sizable burden of preventable illness and death in Canada. Many occupational and environmental carcinogens are widely recognized because of the efforts of organizations such as the International Agency for Research on Cancer (IARC) and the U.S. National Toxicology Program. However, a lack of data on who is exposed to these carcinogens may hamper efforts to prevent future cancers. By systematically identifying who is exposed to these known carcinogens, we can develop effective strategies to prevent related cancers in workplaces and community environments [Greife, 1995; LaMontagne & Christiani, 2002]. Data collected as part of this process of carcinogen surveillance can be used to set priorities for policy or prevention-related activities, monitor trends in exposure, set research priorities, and educate policy makers and the public.

CAREX, the International Information System on Occupational Exposure to Carcinogens, was developed by the Finnish Institute for Occupational Health (FIOH) as part of a European Union effort to estimate the burden of occupational cancer [Kauppinen et al, 2000]. Its purpose was to produce estimates of the number of people with potential workplace exposure to definite (Category 1), probable (Category 2A), and selected possible (Category 2B) workplace carcinogens, as classified by the International Agency for Research on Cancer in 1995. Initially, CAREX was only used to help develop and store exposure estimates for the European Union and the United States [Kauppinen et al, 2000]. More recently, it has been used to estimate the number of workers exposed to carcinogens in the Baltic countries, the Czech Republic, and Costa Rica, and to aid in estimating the global burden of exposure to occupational carcinogens [Driscoll et al, 2005; Kauppinen et al, 2001; Partanen et al, 2003].

In the late 1990s, we started a pilot project that used the CAREX model to estimate exposure to workplace carcinogens in British Columbia, and were subsequently funded by WorkSafe BC to continue the project. Several years later a similar initiative was started by Cancer Care Ontario, with additional funding from the Ontario Workplace Safety Insurance Board. We supported this project by providing the exposure assessment expertise and other assistance. These projects have received considerable attention from advocates of cancer prevention. In particular, the Canadian Strategy for Cancer Control (CSCC) recognized the need for a national program like CAREX [CSCC, 2006]. In addition, there has also been interest in the development of a similar program focused on environmental carcinogens. We are therefore proposing the creation of a National Occupational and Environmental Carcinogen Surveillance Unit (NOECSU).

The primary objective of NOECSU is to develop robust estimates of the number of Canadians exposed to carcinogens in the workplace or the community environment. The unit will have five components, all of which will be national in scope: a workplace exposure surveillance project, an environmental exposure surveillance project, a workplace exposure database, an exposure resource centre, and a knowledge translation/exchange project. Each of these components will be briefly discussed below.

Canadian Workplace Carcinogen Exposure Surveillance Project (CWCESP)

Objective: to develop robust estimates of the number of Canadians exposed to workplace carcinogens.

CWCESP will be based generally on CAREX Canada, the modified CAREX model from the BC and Ontario CAREX projects. It uses detailed labour force data from 2001 Canadian Census and provides preliminary estimates of the number of workers exposed to almost every substance listed in Tables 1 (IARC Category 1, Confirmed Carcinogens) and 2 (IARC Category 2A, probable carcinogens). CAREX Canada currently provides estimates for 55 industrial

sectors covering the entire working population in the two provinces. In most cases these estimates are based on extrapolations from Finnish or U.S. prevalence estimates. However, we have improved the estimates of the number of workers exposed to some of the most common occupational carcinogens using Canadian data and exposure expertise.

CWCESP will provide estimates of the number of Canadians occupationally exposed by both province and industry sector. We will continue and improve on the process we started with CAREX Canada. Where possible, estimates will be based directly on Canadian data sources, such as the Canadian Workplace Exposure Database (see below), and any available data indicating level of exposure will be summarized. In the absence of hard data, estimates will be based on expert assessment. Additional IARC Category 1 and 2A carcinogens with a potential for occupational exposure that have been identified after CAREX was originally created will be added. We are also planning expansion of the original list to include IARC 2B carcinogens that are common in Canada. Table 3 provides a list of IARC 2B (possible) carcinogens. We have just been awarded a small grant from the National Cancer Institute of Canada to identify priority 2B carcinogens. Priority will primarily be defined on the basis of prevalence of exposure in Canada and the potential for exposure to hazardous levels.

Data from CAREX Canada are stored in a Microsoft Access Database where they can be easily searched. Examples of CAREX Canada using British Columbia data will soon be available on the internet at http://www.cher.ubc.ca/carex [website will be launched in May].

Canadian Environmental Carcinogen Exposure Surveillance Project (CECESP)

Objective: to develop robust estimates of the number of Canadians exposed to environmental carcinogens by province and, where possible and appropriate, by Census Division.

Unlike CAREX, we do not have an established model to follow. The primary approach we would propose to use is to generate estimates by Census divisions within provinces and territories. However, the approach may need to evolve based on the data available and the nature of the carcinogens. Many exposures may be appropriate to present geographically (such as particulate air pollution, chlorination by-products, radon, and arsenic in drinking water). Other primary exposure routes, such as food or consumer products, may be assessed differently and an alternative model focusing on the identification of high-risk sub-groups may be used. As with CWCESP, estimates will be based directly on Canadian data sources when possible, any data indicating level of exposure summarized, and in the absence of hard data, experts in exposure will make estimates.

Initially, we will begin with a relatively short list of environmental carcinogens that are common in Canada. Efforts are currently underway to identify priority carcinogens that also represent the diversity of environmental exposures in terms of routes of exposure (i.e. air, water, soil, food, and consumer products). We have conducted some preliminary work to explore potential candidates from among IARC Categories 1 and 2A carcinogens. Some of the prime candidates would be arsenic, asbestos, benzene, hexavalent chromium, diesel engine exhaust, formaldehyde, lead, polychlorinated biphenyls, polycyclic aromatic hydrocarbons, tetrachlorodibenzo-para-dioxin, tetrachloroethylene, and trichloroethylene. As mentioned earlier, we have just been awarded a small grant from the National Cancer Institute of Canada to identify priority 2B carcinogens based primarily on prevalence of exposure and the potential for exposure to hazardous levels. Some exposure that we will certainly consider, such as water disinfection by-products and particulate air pollution, have not been specifically addressed in IARC evaluations.

We will also identify some specific pesticides for inclusion. We believe that we can estimate the number of people potentially exposed to specific pesticides using a combination of information from federal and provincial ministries of environment, health, and agriculture in combination with Statistics Canada data. For example, chlorothalonil is a fungicide and possible carcinogen (IARC 2B). In 1999 there were 26,640 kilograms used in BC [ENCON, 1999]. It can be applied to numerous crops and it also used by landscape services. It represents 4% of pesticides used by landscape services in the Vancouver area, and its use increased by 1200% between 1991 and 1999. By combining Statistics Canada data on the number of farms producing specific crops with agricultural census data, it may be possible to estimate the number of people living on farms where chlorothanlonil is used. This is also a good example of where occupational and environmental exposures may be related and exposures may be estimated using overlapping data sources.

Canadian Workplace Exposure Database (CWED)

Objective: to develop a national database with all workplace exposure data collected by public agencies and other organizations.

As part of the CAREX Canada project we obtained workplace exposure data from WorkSafe BC and the Ontario Ministry of Labour. For formaldehyde, for example, we have 7,936 measurements collected in Ontario between 1981 and 1996 and 2,788 collected in British Columbia between 1981 and 2004. For CWED we plan to expand this database. In preparation for this proposal we contacted agencies across Canada responsible for collecting workplace exposure data to determine if employers are in compliance with regulatory limits. Of the agencies we have been able to contact thus far, other than our initial two agencies only the National Dose Registry, Human Resources and Skills Development Canada, and the Quebec Commission de la santé et de la securité de travail maintain large computerized exposure databases. Most agencies expressed positive interest in the project, although some have confidentiality and practical concerns. Based on this initial survey we will be expanding our search for data to include other, non-regulatory organizations with substantial exposure databases. For example, we will be approaching researchers and some industry groups to contribute data. When raw data is unavailable we will request aggregate data or abstract results from published reports.

Apart from feeding quantitative data to the CWCESP, CWED will also act as an independent surveillance and research tool. In combination with CWCESP, it will help identify groups in need of exposure assessment or high priority groups for prevention activities. Data from CWED may also be used for assessing exposure for epidemiologic studies and risk assessment. We will make this available in aggregate form as part of CWCESP. To facilitate outside access and use of this data, we have sought collaboration with the UBC Population Health Learning Observatory (http://www.phlo.ubc.ca), funded by the Canadian Foundation for Innovation. Through PHLO we will have a process to provide access to the underlying data, with the data providers' permission. In cooperation with PHLO we have begun establishing the database, starting with data from British Columbia.

Canadian Carcinogen Exposure Resource Centre (CCERC)

Objective: to identify, describe, and store the sources of exposure information used by both the environmental and occupational projects.

The CCERC will be a web-based resource centre. It will provide brief descriptions of NOECSU activities with links to publications, publicly available reports, web-based resources, and the actual data sets referenced in the CWCESP and CECESP. For example, for carcinogens used in wood preservation, we would provide a link to a survey of wood preservation facilities produced by Environment Canada, a link to the Industry Canada website with information on employment data for that sector, as well as links to various pesticide use reports published by Environment Canada in cooperation with the provinces.

In the case of datasets that are already publicly available, it will provide a full description and information on how to directly access. An example of this type of public resource can be found at a website created by researchers from the University of Victoria as part of the Health Canada-funded Border Air Quality Study (http://www.geog.uvic.ca/AIR/ambframe.htm). For ambient air pollution data in southwestern BC this website provides a brief description of the dataset, the data collector or holder, spatial extent of data, start and end year of data collection, spatial and/or temporal resolution, date of data origin, data access information, list of key attributes, and noted data use restrictions.

In addition to providing transparency to the CWCESP and CECESP, the CCERC resources will be available for use by others for public education, surveillance, risk assessment, and research. The CCERC will also provide a forum for the distribution of NOECSU reports. A clear description of the strengths and limitations of the NOECSU reports will also be available and will be written in a manner that is accessible to laypeople.

Knowledge Transfer and Exchange (KTE)

Objective: to prepare reports for dissemination and use a collaborative network to facilitates KTE at the provincial and national levels

The KTE component is designed to support the overarching goal of NOECSU to provide policy makers with data essential for developing prevention strategies. Reports will fall into two broad categories. The first will consist of reports that are designed to disseminate estimates of the prevalence and levels of exposure to carcinogens. The second category will consist of reports on the availability or use of carcinogen exposure data or similar issues. Examples would include reviews of the collection of workplace exposure data by regulatory agencies in Canada or methods to estimate the burden of occupational and environmental cancer using exposure surveillance data. To further our commitment to outreach, all NOESCU reports will include an executive summary written by the KTE staff to help ensure that the information is accessible for the public as well as scientists and policy-makers. Executive summaries and a catalogue of NOECSU's Resource Centre will also be made available in both English and French.

One of the main functions of the collaborative network (described below) will be to provide feedback on NOESCU reports and to help identify key federal, provincial, and territorial organizations for dissemination of reports. Relevant network members will be notified first of new research reports as they are generated and will thus have an opportunity to review the documents and offer comments prior to public release.

NOECSU Structure

NOECSU will be based in the School of Occupational and Environmental Hygiene at the University of British Columbia (http://www.soeh.ubc.ca). An academic setting has several advantages, such as independence and access to library and other resources. In addition, we

will recruit new students to the area of cancer prevention by providing funding for up to three candidates to develop innovative projects that further the objectives of the unit.

Paul Demers will be the Scientific Director. A draft, detailed budget is included at the end of this report. The budget consists primarily of personnel costs. The permanent staff will include an executive director with expertise in KTE, an occupational hygienist, an environmental scientist, a database manager, an occupational hygiene technician, a GIS technician, and a communications assistant. Knowledge transfer and exchange is a key focus of the NOESCU unit and will be facilitated by recruitment of staff experienced in science writing, health communication and health policy. We will attempt to recruit bilingual staff, when possible, although this can be a challenge in Vancouver.

In the initial start-up phase a staff of temporary employees will be recruited, including recent graduates from the School of Occupational and Environmental Hygiene and other universities to do a comprehensive review of the scientific literature, government reports, and web scans to identify relevant Canadian exposure data. In addition, they will identify major exposure data holders and contact them and assist in developing the model for estimating exposure to environmental carcinogens.

A collaborative network or organizations working on projects related to either occupational or environmental exposures or both will be developed. Some members of the network may wish to generate their own workplace or environmental exposure estimates for their own province or region, but to coordinate with the national project to share resources. Other members may wish to participate by reviewing exposure estimates or reports and provide feedback or otherwise participate in KTE activities as described above. Network member organizations will also help set priorities for NOESCU and will assist in gathering and identifying new data resources. Network members may be involved in all or part of these activities. However membership in the network will involve, at minimum, a two-way commitment to communication. We will also develop an e-mail list for rapid dissemination of information to relevant or interested organizations and individuals and welcome any spontaneous input received.

We have begun developing a network already and to date have discussed participation with the WorkSafeBC/UBC-Centre for Health Services and Policy Research Partnership (http://www.chspr.ubc.ca/research/worksafebc), the Occupational Cancer Research Program of Cancer Care Ontario, and the Division of Population Health and Information of the Alberta Cancer Board. Other organizations we will be approaching to participate in our KTE network include the Public Health Agency of Canada's National Collaborating Centre for Environmental Health and the provincial Canadian Strategy for Cancer Control's environmental or occupational committees.

To maintain strong ties with the Canadian Strategy for Cancer Control we are proposing the National Environmental and Occupational Exposures Committee of the CSCC act as the National Advisory Committee for NOECSU. We will also create a Scientific Advisory Panel consisting of national experts in occupational and environmental exposures who will provide input regarding the validity of the exposure assessment approaches and priorities. For example, Will King from Queen's University will be approached because of his expertise in disinfection by-products and Igor Burstyn from the University of Alberta will be approached because of his expertise in occupational exposures.

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Table 1: IARC Human Carcinogens (Group 1)

Category	Agents, groups of agents, mixtures, exposure circumstances
Industrial Chemical	4-Aminobiphenyl (Vol. 1, Suppl. 7; 1987)
Metals	Arsenic and arsenic compounds (Vol. 23, Suppl. 7; 1987)
Fibres Dust	Asbestos (Vol. 14, Suppl. 7; 1987)
Pharmacological	Azathioprine (Vol. 26, Suppl. 7; 1987)
Industrial Chemical	Benzene (Vol. 29, Suppl. 7; 1987)
Industrial Chemical	Benzidine (Vol. 29, Suppl. 7; 1987)
Combustion Product	Benzo[a]pyrene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Metals	Beryllium and beryllium compounds (Vol. 58; 1993)
Pharmacological	N,N-Bis(2-chloroethyl)-2-naphthylamine (Chlornaphazine) (Vol. 4, Suppl. 7; 1987)
Industrial Chemical	Bis(chloromethyl)ether and chloromethyl methyl ether (technical-grade)(Vol. 4, Suppl. 7; 1987)
Pharmacological	1,4-Butanediol dimethanesulfonate (Busulphan; Myleran) (Vol. 4, Suppl. 7; 1987)
Metals	Cadmium and cadmium compounds (Vol. 58; 1993)
Pharmacological	Chlorambucil (Vol. 26, Suppl. 7; 1987)
Pharmacological	1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea (Methyl-CCNU; Semustine) (Suppl. 7; 1987)
Metals	Chromium[VI] (Vol. 49; 1990)
Pharmacological	Ciclosporin (Vol. 50; 1990)
Pharmacological	Cyclophosphamide (Vol. 26, Suppl. 7; 1987)
Hormone	Diethylstilboestrol (Vol. 21, Suppl. 7; 1987)
Microbiological	Epstein-Barr virus (Vol. 70; 1997)
Mineral	Erionite (Vol. 42, Suppl. 7; 1987)
Hormone	Estrogen-progestogen menopausal therapy (combined) (Vol. 72, Vol. 91; in preparation)
Hormone	Estrogen-progestogen oral contraceptives (combined) (Vol. 72, Vol. 91; in preparation)
Hormone	Estrogens, nonsteroidal (Suppl. 7; 1987)
Hormone	Estrogens, steroidal (Suppl. 7; 1987)
Hormone	Estrogen therapy, postmenopausal (Vol. 72; 1999)
Industrial Chemical	Ethylene oxide (Vol. 60; 1994)
Pharmacological	Etoposide in combination with cisplatin and bleomycin (Vol. 76; 2000)
Industrial Chemical	Formaldehyde (Vol. 88; in preparation)
Metals	Gallium arsenide (Vol. 86; 2006)
Microbiological	Helicobacter pylori (infection with) (Vol. 61; 1994)
Microbiological	Hepatitis B virus (chronic infection with) (Vol. 59; 1994)
Microbiological	Hepatitis C virus (chronic infection with) (Vol. 59; 1994)
Microbiological	Human immunodeficiency virus type 1 (infection with) (Vol. 67; 1996)
Microbiological	Human papillomavirus types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59 and 66 (Vol. 64, Vol. 90; in preparation)
Microbiological	Human T-cell lymphotropic virus type I (Vol. 67; 1996)
Pharmacological	Melphalan (Vol. 9, Suppl. 7; 1987)
Pharmacological	8-Methoxypsoralen (Methoxsalen) plus ultraviolet A radiation (Vol. 24, Suppl. 7; 1987)
Pharmacological	MOPP and other combined chemotherapy including alkylating agents (Suppl. 7; 1987)
Pharmacological	Mustard gas (Sulfur mustard) (Vol. 9, Suppl. 7; 1987)
Industrial Chemical	2-Naphthylamine (Vol. 4, Suppl. 7; 1987)
Radiation	Neutrons (Vol. 75; 2000)
Metals	Nickel compounds (Vol. 49; 1990)
Diet	N'-Nitrosonornicotine (NNN) & 4-(N-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone (NNK) (Vol. 37, Suppl. 7, Vol. 89; in preparation)
Microbiological	Opisthorchis viverrini (infection with) (Vol. 61; 1994)
Hormone	Oral contraceptives, sequential (Suppl. 7; 1987)
Radiation	Phosphorus-32, as phosphate (Vol. 78; 2001)
Radiation	Plutonium-239 and its decay products (may contain plutonium-240 and other isotopes), as aerosols (Vol. 78; 2001)
Radiation	Radioiodines, short-lived isotopes, including iodine-131, from atomic reactor accidents and nuclear weapons detonation (exposure during childhood) (Vol. 78; 2001)
Radiation	Radionuclides, a-particle-emitting, internally deposited (Vol. 78; 2001)
Radiation	Radionuclides, b-particle-emitting, internally deposited (Vol. 78; 2001)
Radiation	Radium-224 and its decay products (Vol. 78; 2001)
Radiation	Radium-226 and its decay products (Vol. 78; 2001)
Radiation	Radium-228 and its decay products (Vol. 78; 2001)
Radiation	Radon-222 and its decay products (Vol. 43, Vol. 78; 2001)
Microbiological	Schistosoma haematobium (infection with) (Vol. 61; 1994)
Fibres Dust	Silica, crystalline (inhaled in the form of quartz or cristobalite from occupational sources) (Vol. 68; 1997)
Radiation	Solar radiation (Vol. 55; 1992)

Table 1: IARC Human Carcinogens (Group 1, continued)

Category	Agents, groups of agents, mixtures, exposure circumstances
Fibres Dust	Talc containing asbestiform fibres (Vol. 42, Suppl. 7; 1987)
Pharmacological	Tamoxifen (Vol. 66; 1996)
Industrial Chemical	2,3,7,8-Tetrachlorodibenzo-para-dioxin [1746-01-6] (Vol. 69; 1997)
Pharmacological	Thiotepa (Vol. 50; 1990)
Pharmacological	Thorium-232 and its decay products, administered intravenously as a colloidal dispersion of thorium-232 dioxide (Vol. 78; 2001)
Pharmacological	Treosulfan (Vol. 26, Suppl. 7; 1987)
Industrial Chemical	Vinyl chloride (Vol. 19, Suppl. 7; 1987)
Radiation	X- and Gamma (g)-Radiation (Vol. 75; 2000)
Microbiological	Aflatoxins (naturally occurring mixtures of) (Vol. 56, Vol. 82; 2002)
Diet	Alcoholic beverages (Vol. 44; 1988)
Diet	Areca nut (Vol. 85; 2004)
Diet	Betel quid without tobacco (Vol. 85; 2004)
Industrial Chemical	Coal-tar pitches (Vol. 35, Suppl. 7; 1987)
Industrial Chemical	Coal-tars (Vol. 35, Suppl. 7; 1987)
Pharmacological	Herbal remedies containing plant species of the genus Aristolochia (Vol. 82; 2002)
Industrial Chemical	Mineral oils, untreated and mildly treated (Vol. 33, Suppl. 7; 1987)
Pharmacological	Phenacetin, analgesic mixtures containing (Suppl. 7; 1987)
Diet	Salted fish (Chinese-style) (Vol. 56; 1993)
Industrial Chemical	Shale-oils (Vol. 35, Suppl. 7; 1987)
Combustion Product	Soots (Vol. 35, Suppl. 7; 1987)
Diet	Tobacco, smokeless (Vol. 37, Suppl. 7, Vol. 89; in preparation)
Fibres Dust	Wood dust (Vol. 62; 1995)
Exposure Circumstance	Aluminium production (Vol. 34, Suppl. 7; 1987)
Metals	Arsenic in drinking-water (Vol. 84; 2004)
Exposure Circumstance	Auramine, manufacture of (Suppl. 7; 1987)
Exposure Circumstance	Boot and shoe manufacture and repair (Vol. 25, Suppl. 7; 1987)
Exposure Circumstance	Chimney sweeping (Vol. 92; in preparation)
Exposure Circumstance	Coal gasification (Vol. 34, Suppl. 7, Vol. 92; in preparation)
Exposure Circumstance	Coal-tar distillation (Vol. 92; in preparation)
Exposure Circumstance	Coke production (Vol. 34, Suppl. 7, Vol. 92; in preparation)
Exposure Circumstance	Furniture and cabinet making (Vol. 25, Suppl. 7; 1987)
Exposure Circumstance	Haematite mining (underground) with exposure to radon (Vol. 1, Suppl. 7; 1987)
Combustion Product	Involuntary smoking (exposure to secondhand or 'environmental' tobacco smoke) (Vol. 83; 2004)
Exposure Circumstance	Iron and steel founding (Vol. 34, Suppl. 7; 1987)
Exposure Circumstance	Isopropyl alcohol manufacture (strong-acid process) (Suppl. 7; 1987)
Exposure Circumstance	Magenta, manufacture of (Vol. 57; 1993)
Exposure Circumstance	Painter (occupational exposure as a) (Vol. 47; 1989)
Exposure Circumstance	Paving and roofing with coal-tar pitch (Vol. 92; in preparation)
Exposure Circumstance	Rubber industry (Vol. 28, Suppl. 7; 1987)
Exposure Circumstance	Strong-inorganic-acid mists containing sulfuric acid (occupational exposure to) (Vol. 54; 1992)
Combustion Product	Tobacco smoking and tobacco smoke (Vol. 83; 2004)

Table 2: IARC Probable Human Carcinogens (Group 2A)

Category	Agents and groups of agents
Industrial Chemical	Acrylamide (Vol. 60; 1994)
Diet	Adriamycin (Vol. 10, Suppl. 7; 1987)
Hormone	Androgenic (anabolic) steroids (Suppl. 7; 1987)
Pharmacological	Aristolochic acids (naturally occurring mixtures of) (Vol. 82; 2002)
Pharmacological	Azacitidine (Vol. 50; 1990)
Industrial Chemical	Benzidine-based dyes (Suppl. 7; 1987)
Pharmacological	Bischloroethyl nitrosourea (BCNU) (Vol. 26, Suppl.7; 1987)
Industrial Chemical	1,3-Butadiene (Vol. 71; 1999)
Pesticide	Captafol (Vol. 53; 1991)
Pharmacological	Chloramphenicol (Vol. 50; 1990)
Industrial Chemical	a-Chlorinated toluenes (benzal chloride, benzotrichloride, benzyl chloride) and benzoyl chloride (combined exposures) (Vol. 29, Suppl. 7, Vol. 71; 1999)
Pharmacological	1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea (CCNU) (Vol. 26, Suppl. 7; 1987)
Industrial Chemical	4-Chloro-*ortho*-toluidine (Vol. 77; 2000)
Pharmacological	Chlorozotocin (Vol. 50; 1990)
Pharmacological	Cisplatin (Vol. 26, Suppl. 7; 1987)

Table 2: IARC Probable Human Carcinogens (Group 2A, continued)

Category	Agents and groups of agents
Microbiological	*Clonorchis sinensis* (infection with) (Vol. 61; 1994)
Combustion Product	Cyclopenta[*cd*]pyrene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Combustion Product	Dibenz[*a,h*]anthracene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Combustion Product	Dibenzo[*a,l*]pyrene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Industrial Chemical	Diethyl sulfate (Vol. 54, Vol. 71; 1999)
Industrial Chemical	Dimethylcarbamoyl chloride (Vol. 12, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	1,2-Dimethylhydrazine (Vol. 4, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	Dimethyl sulfate (Vol. 4, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	Epichlorohydrin (Vol. 11, Suppl. 7, Vol. 71; 1999)
Pesticide	Ethylene dibromide (Vol. 15, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	*N*-Ethyl-*N*-nitrosourea (Vol. 17; 1987)
Pharmacological	Etoposide (Vol. 76; 2000)
Industrial Chemical	Glycidol (Vol. 77; 2000)
Metals	Indium phosphide (Vol. 86; 2006)
Diet	IQ (2-Amino-3-methylimidazo[4,5-*f*]quinoline) (Vol. 56; 1993)
Microbiological	Kaposi's sarcoma herpesvirus/human herpesvirus 8 (Vol. 70; 1997)
Metals	Lead compounds, inorganic (Vol. 87; 2006)
Pharmacological	5-Methoxypsoralen (Vol. 40, Suppl. 7; 1987)
Industrial Chemical	4,4′-Methylene bis(2-chloroaniline) (MOCA) (Vol.57; 1993)
Industrial Chemical	Methyl methanesulfonate (Vol. 7, Suppl. 7, Vol. 71; 1999)
Pharmacological	*N*-Methyl-*N*′-nitro-*N*-nitrosoguanidine(MNNG) (Vol. 4, Suppl. 7; 1987)
Industrial Chemical	*N*-Methyl-*N*-nitrosourea (Vol. 17; 1987)
Diet	Nitrate or nitrite (ingested) under conditions that result in endogenous nitrosation (Vol. 94; in preparation)
Pharmacological	Nitrogen mustard (Vol. 9, Suppl. 7; 1987)
Industrial Chemical	*N*-Nitrosodiethylamine (Vol. 17; 1987)
Industrial Chemical	*N*-Nitrosodimethylamine (Vol. 17; 1987)
Pharmacological	Phenacetin (Vol. 24, Suppl. 7; 1987)
Pharmacological	Procarbazine hydrochloride (Vol. 26, Suppl. 7; 1987)
Industrial Chemical	Styrene-7,8-oxide (Vol. 60; 1994)
Pharmacological	Teniposide (Vol. 76; 2000)
Industrial Chemical	Tetrachloroethylene (Vol. 63; 1995)
Industrial Chemical	*ortho*-Toluidine (Vol. 77; 2000)
Industrial Chemical	Trichloroethylene (Vol. 63; 1995)
Industrial Chemical	1,2,3-Trichloropropane (Vol. 63; 1995)
Industrial Chemical	Tris(2,3-dibromopropyl) phosphate (Vol. 20, Suppl. 7, Vol. 71;1999)
Radiation	Ultraviolet radiation A (Vol. 55; 1992)
Radiation	Ultraviolet radiation B (Vol. 55; 1992)
Radiation	Ultraviolet radiation C (Vol. 55; 1992)
Ind Chem	Vinyl bromide (Vol. 39, Suppl. 7, Vol. 71; 1999)
Ind Chem	Vinyl fluoride (Vol. 63; 1995)
Ind Chem	Creosotes (Vol. 35, Suppl. 7, Vol. 92; in preparation)
Combustion Product	Diesel engine exhaust (Vol. 46; 1989)
Diet	Hot mate (Vol. 51; 1991)
Pesticide	Non-arsenical insecticides (occupational exposures in spraying and application of) (Vol. 53; 1991)
Industrial Chemical	Polychlorinated biphenyls (Vol. 18, Suppl. 7; 1987)
Exposure Circumstance	Art glass, glass containers and pressed ware (manufacture of) (Vol. 58; 1993)
Exposure Circumstance	Carbon electrode manufacture (Vol. 92; in preparation)
Metals	Cobalt Metals with tungsten carbide (Vol. 86; 2006)
Exposure Circumstance	Hairdresser or barber (occupational exposure as a) (Vol. 57; 1993)
Exposure Circumstance	Petroleum refining (occupational exposures in) (Vol. 45; 1989)
Radiation	Sunlamps and sunbeds (use of) (Vol. 55; 1992)

Table 3: IARC Possible Human Carcinogens (Group 2B)

Category	Agents and groups of agents
Diet	A-alpha-C (2-Amino-9*H*-pyrido[2,3-*b*]indole) (Vol. 40, Suppl. 7; 1987)
Industrial Chemical	Acetaldehyde (Vol. 36, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	Acetamide (Vol. 7, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	Acrylonitrile (Vol. 71; 1999)
Diet	AF-2 [2-(2-Furyl)-3-(5-nitro-2-furyl)acrylamide] (Vol.31, Suppl. 7; 1987)
Microbiological	Aflatoxin M1 (Vol. 56; 1993)
Industrial Chemical	*para*-Aminoazobenzene (Vol. 8, Suppl. 7; 1987)
Industrial Chemical	*ortho*-Aminoazotoluene (Vol. 8, Suppl. 7; 1987)
Pharmacological	2-Amino-5-(5-nitro-2-furyl)-1,3,4-thiadiazole (Vol. 7, Suppl. 7; 1987)
Pharmacological	Amsacrine (Vol. 76; 2000)
Industrial Chemical	*ortho*-Anisidine (Vol. 73; 1999)
Metals	Antimony trioxide (Vol. 47; 1989)
Pesticide	Aramite® (Vol. 5, Suppl. 7; 1987)
Industrial Chemical	Auramine (technical-grade) (Vol. 1, Suppl. 7; 1987)
Diet	Azaserine (Vol. 10, Suppl. 7; 1987)
Industrial Chemical	Aziridine (Vol. 9, Suppl. 7, Vol. 71; 1999)
Combustion Product	Benz[*j*]aceanthrylene (Vol. 92; in preparation)
Combustion Product	Benz[*a*]anthracene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Combustion Product	Benzo[*b*]fluoranthene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Combustion Product	Benzo[*j*]fluoranthene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Combustion Product	Benzo[*k*]fluoranthene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Industrial Chemical	Benzofuran (Vol. 63; 1995)
Combustion Product	Benzo[*c*]phenanthrene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Industrial Chemical	Benzyl violet 4B (Vol. 16, Suppl. 7; 1987)
Industrial Chemical	2,2-Bis(bromomethyl)propane-1,3-diol (Vol. 77; 2000)
Pharmacological	Bleomycins (Vol. 26, Suppl. 7; 1987)
Diet	Bracken fern (Vol. 40, Suppl. 7; 1987)
Industrial Chemical	Bromodichloromethane (Vol. 52, Vol. 71; 1999)
Diet	Butylated hydroxyanisole (BHA) (Vol. 40, Suppl. 7;1987)
Industrial Chemical	beta-Butyrolactone (Vol. 11, Suppl. 7, Vol. 71; 1999)
Diet	Caffeic acid (Vol. 56; 1993)
Industrial Chemical	Carbon black (Vol. 65, Vol. 93; in preparation)
Industrial Chemical	Carbon tetrachloride (Vol. 20, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	Catechol (Vol. 15, Suppl. 7, Vol. 71; 1999)
Pesticide	Chlordane (Vol. 79; 2001)
Pesticide	Chlordecone (Kepone) (Vol. 20, Suppl. 7; 1987)
Industrial Chemical	Chlorendic acid (Vol. 48; 1990)
Industrial Chemical	*para*-Chloroaniline (Vol. 57; 1993)
Industrial Chemical	3-Chloro-4-(dichloromethyl)-5-hydroxy-2(*5H*)-furanone (Vol. 84; 2004)
Industrial Chemical	Chloroform (Vol. 73; 1999)
Industrial Chemical	1-Chloro-2-methylpropene [513-37-1] (Vol. 63; 1995)
Pesticide	Chlorophenoxy herbicides (Vol. 41, Suppl. 7; 1987)
Industrial Chemical	4-Chloro-*ortho*-phenylenediamine (Vol. 27, Suppl.7; 1987)
Industrial Chemical	Chloroprene (Vol. 71; 1999)
Pesticide	Chlorothalonil (Vol. 73; 1999)
Combustion Product	Chrysene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Industrial Chemical	CI Acid Red 114 (Vol. 57; 1993)
Industrial Chemical	CI Basic Red 9 (Vol. 57; 1993)
Industrial Chemical	CI Direct Blue 15 (Vol. 57; 1993)
Industrial Chemical	Citrus Red No. 2 (Vol. 8, Suppl. 7; 1987)
Metals	Cobalt and cobalt compounds (Vol. 52; 1991)
Metals	Cobalt sulfate and other soluble cobalt(II) salts (Vol. 86; 2006)
Industrial Chemical	*para*-Cresidine (Vol. 27, Suppl. 7; 1987)
Diet	Cycasin (Vol. 10, Suppl. 7; 1987)
Pharmacological	Dacarbazine (Vol. 26, Suppl. 7; 1987)
Pharmacological	Dantron (Chrysazin; 1,8-Dihydroxyanthraquinone) (Vol. 50; 1990)
Diet	Daunomycin (Vol. 10, Suppl. 7; 1987)
Pesticide	DDT [*p,p'*-DDT, 50-29-3] (Vol. 53; 1991)
Industrial Chemical	*N,N'*-Diacetylbenzidine (Vol. 16, Suppl.7; 1987)
Industrial Chemical	2,4-Diaminoanisole (Vol. 79; 2001)
Industrial Chemical	4,4'-Diaminodiphenyl ether (Vol. 29, Suppl. 7; 1987)
Industrial Chemical	2,4-Diaminotoluene (Vol. 16, Suppl. 7; 1987)
Combustion Product	Dibenz[*a,h*]acridine (Vol. 32, Suppl. 7; 1987)

Table 3: IARC Possible Human Carcinogens (Group 2B, continued)

Category	Agents and groups of agents
Combustion Product	Dibenz[*a,j*]acridine (Vol. 32, Suppl. 7; 1987)
Combustion Product	7*H*-Dibenzo[*c,g*]carbazole (Vol. 32, Suppl.7; 1987)
Combustion Product	Dibenzo[*a,h*]pyrene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Combustion Product	Dibenzo[*a,l*]pyrene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Pesticide	1,2-Dibromo-3-chloropropane (Vol. 20, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	2,3-Dibromopropan-1-ol (Vol. 77; 2000)
Industrial Chemical	Dichloroacetic acid (Vol. 84; 2004)
Pesticide	*para*-Dichlorobenzene (Vol. 73; 1999)
Industrial Chemical	3,3'-Dichlorobenzidine (Vol. 29, Suppl. 7; 1987)
Industrial Chemical	3,3'-Dichloro-4,4'-diaminodiphenyl ether (Vol. 16,Suppl. 7; 1987)
Industrial Chemical	1,2-Dichloroethane (Vol. 20, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	Dichloromethane (methylene chloride) (Vol. 71; 1999)
Industrial Chemical	1,3-Dichloropropene (technical-grade) (Vol. 41, Suppl.7, Vol. 71; 1999)
Pesticide	Dichlorvos (Vol. 53; 1991)
Industrial Chemical	1,2-Diethylhydrazine (Vol. 4, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	Diglycidyl resorcinol ether (Vol. 36, Suppl. 7, Vol. 71; 1999)
Diet	Dihydrosafrole (Vol. 10, Suppl. 7; 1987)
Industrial Chemical	Diisopropyl sulfate (Vol. 54, Vol. 71; 1999)
Industrial Chemical	3,3'-Dimethoxybenzidine (*ortho*-Dianisidine) (Vol. 4, Suppl. 7; 1987)
Industrial Chemical	*para*-Dimethylaminoazobenzene (Vol. 8, Suppl. 7; 1987)
Pharmacological	*trans*-2-[(Dimethylamino)methylimino]-5-[2-(5-nitro-2-furyl)-vinyl]-1,3,4-oxadiazole (Vol. 7, Suppl. 7; 1987)
Industrial Chemical	2,6-Dimethylaniline (2,6-Xylidine) (Vol. 57; 1993)
Industrial Chemical	3,3'-Dimethylbenzidine (*ortho*-Tolidine) (Vol.1, Suppl. 7; 1987)
Industrial Chemical	1,1-Dimethylhydrazine (Vol. 4, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	3,7-Dinitrofluoranthene (Vol. 65; 1996)
Industrial Chemical	3,9-Dinitrofluoranthene (Vol. 65; 1996)
Combustion Product	1,6-Dinitropyrene (Vol. 46; 1989)
Combustion Product	1,8-Dinitropyrene (Vol. 46; 1989)
Industrial Chemical	2,4-Dinitrotoluene (Vol. 65; 1996)
Industrial Chemical	2,6-Dinitrotoluene (Vol. 65; 1996)
Industrial Chemical	1,4-Dioxane (Vol. 11, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	Disperse Blue 1 (Vol. 48; 1990)
Industrial Chemical	1,2-Epoxybutane (Vol. 47, Vol. 71; 1999)
Industrial Chemical	Ethyl acrylate (Vol. 39, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	Ethylbenzene (Vol. 77; 2000)
Pharmacological	Ethyl methanesulfonate (Vol. 7, Suppl. 7; 1987)
Pharmacological	2-(2-Formylhydrazino)-4-(5-nitro-2-furyl)thiazole (Vol. 7, Suppl. 7; 1987)
Microbiological	Fumonisin B_1 (Vol. 82; 2002)
Industrial Chemical	Furan (Vol. 63; 1995)
Diet	Glu-P-1 (2-Amino-6-methyldipyrido[1,2-*a*:3',2'-*d*]imidazole) (Vol. 40, Suppl. 7; 1987)
Diet	Glu-P-2 (2-Aminodipyrido[1,2-*a*:3',2'-*d*]imidazole) (Vol. 40, Suppl. 7; 1987)
Industrial Chemical	Glycidaldehyde [765-34-4] (Vol. 11, Suppl. 7, Vol. 71; 1999)
Pharmacological	Griseofulvin [126-07-8] (Vol. 79; 2001)
Industrial Chemical	HC Blue No. 1 [2784-94-3] (Vol. 57; 1993)
Pesticide	Heptachlor (Vol. 79; 2001)
Pesticide	Hexachlorobenzene (Vol. 79; 2001)
Industrial Chemical	Hexachloroethane (Vol. 73; 1999)
Pesticide	Hexachlorocyclohexanes (Lindane) (Vol. 20, Suppl. 7; 1987)
Industrial Chemical	Hexamethylphosphoramide (Vol. 15, Suppl. 7, Vol. 71; 1999)
Microbiological	Human immunodeficiency virus type 2 (infection with) (Vol. 67; 1996)
Microbiological	Human papillomavirus types 6 and 11 (Vol. 90; in preparation)
Microbiological	Human papillomavirus genus beta (some types) (Vol. 90; in preparation)
Industrial Chemical	Hydrazine (Vol. 4, Suppl. 7, Vol. 71; 1999)
Pharmacological	1-Hydroxyanthraquinone (Vol. 82; 2002)
Combustion Product	Indeno[1,2,3-*cd*]pyrene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Diet	Iron-dextran complex (Vol. 2, Suppl. 7; 1987)
Industrial Chemical	Isoprene (Vol. 60, Vol. 71; 1999)
Diet	Lasiocarpine (Vol. 10, Suppl. 7; 1987)
Metals	Lead (Vol. 23, Suppl. 7; 1987)
Industrial Chemical	Magenta (containing CI Basic Red 9) (Vol. 57; 1993)
Radiation	Magnetic fields (extremely low-frequency) (Vol. 80; 2002)
Diet	MeA-alpha-C (2-Amino-3-methyl-9*H*-pyrido[2,3-*b*]indole) (Vol. 40, Suppl. 7; 1987)
Hormone	Medroxyprogesterone acetate (Vol. 21, Suppl. 7; 1987)

Table 3: IARC Possible Human Carcinogens (Group 2B, continued)

Category	Agents and groups of agents
Diet	MeIQ (2-Amino-3,4-dimethylimidazo[4,5-*f*]quinoline) (Vol. 56; 1993)
Diet	MeIQx (2-Amino-3,8-dimethylimidazo[4,5-*f*]quinoxaline) (Vol. 56; 1993)
Pharmacological	Merphalan (Vol. 9, Suppl. 7; 1987)
Pharmacological	2-Methylaziridine (Propyleneimine) (Vol. 9, Suppl. 7, Vol. 71; 1999)
Diet	Methylazoxymethanol acetate (Vol. 10, Suppl. 7; 1987)
Combustion Product	5-Methylchrysene (Vol. 32, Suppl. 7, Vol. 92; in preparation)
Industrial Chemical	4,4'-Methylene bis(2-methylaniline) (Vol. 4, Suppl.7; 1987)
Industrial Chemical	4,4'-Methylenedianiline (Vol. 39, Suppl. 7; 1987)
Metals	Methylmercury compounds (Vol. 58; 1993)
Industrial Chemical	2-Methyl-1-nitroanthraquinone (uncertain purity) (Vol.27, Suppl. 7; 1987)
Industrial Chemical	*N*-Methyl-*N*-nitrosourethane (Vol. 4, Suppl.7; 1987)
Pharmacological	Methylthiouracil (Vol. 79; 2001)
Pharmacological	Metronidazole (Vol. 13, Suppl. 7; 1987)
Microbiological	Microcystin-LR (Vol. 94; in preparation)
Pesticide	Mirex (Vol. 20, Suppl. 7; 1987)
Diet	Mitomycin C (Vol. 10, Suppl. 7; 1987)
Pharmacological	Mitoxantrone (Vol. 76; 2000)
Diet	Monocrotaline (Vol. 10, Suppl. 7; 1987)
Pharmacological	5-(Morpholinomethyl)-3-[(5-nitrofurfurylidene)amino]-2-oxazolidinone [3795-88-8] (Vol. 7, Suppl. 7; 1987)
Pharmacological	Nafenopin (Vol. 24, Suppl. 7; 1987)
Industrial Chemical	Naphthalene (Vol. 82; 2002)
Metals	Nickel, Metalslic and alloys (Vol. 49; 1990)
Pharmacological	Niridazole (Vol. 13, Suppl. 7; 1987)
Industrial Chemical	Nitrilotriacetic acid and its salts (Vol. 73; 1999)
Industrial Chemical	5-Nitroacenaphthene (Vol. 16, Suppl. 7; 1987)
Industrial Chemical	2-Nitroanisole (Vol. 65; 1996)
Industrial Chemical	Nitrobenzene (Vol. 65; 1996)
Combustion Product	6-Nitrochrysene (Vol. 46; 1989)
Pesticide	Nitrofen (technical-grade) (Vol. 30, Suppl. 7; 1987)
Combustion Product	2-Nitrofluorene (Vol. 46; 1989)
Pharmacological	1-[(5-Nitrofurfurylidene)amino]-2-imidazolidinone (Vol.7, Suppl. 7; 1987)
Pharmacological	*N*-[4-(5-Nitro-2-furyl)-2-thiazolyl]acetamide (Vol. 7, Suppl. 7; 1987)
Pharmacological	Nitrogen mustard *N*-oxide (Vol. 9, Suppl. 7;1987)
Industrial Chemical	Nitromethane (Vol. 77; 2000)
Industrial Chemical	2-Nitropropane (Vol. 29, Suppl. 7, Vol. 71; 1999)
Combustion Product	1-Nitropyrene (Vol. 46; 1989)
Combustion Product	4-Nitropyrene (Vol. 46; 1989)
Industrial Chemical	*N*-Nitrosodi-*n*-butylamine (Vol. 17, Suppl.7; 1987)
Industrial Chemical	*N*-Nitrosodiethanolamine (Vol. 17, Suppl. 7, Vol. 77; 2000)
Industrial Chemical	*N*-Nitrosodi-*n*-propylamine (Vol. 17, Suppl.7; 1987)
Diet	3-(*N*-Nitrosomethylamino)propionitrile (Vol. 85; 2004)
Industrial Chemical	*N*-Nitrosomethylethylamine (Vol. 17, Suppl. 7; 1987)
Industrial Chemical	*N*-Nitrosomethylvinylamine (Vol. 17, Suppl. 7; 1987)
Industrial Chemical	*N*-Nitrosomorpholine (Vol. 17, Suppl. 7; 1987)
Industrial Chemical	*N*-Nitrosopiperidine (Vol. 17, Suppl. 7; 1987)
Industrial Chemical	*N*-Nitrosopyrrolidine (Vol. 17, Suppl. 7; 1987)
Industrial Chemical	*N*-Nitrososarcosine (Vol. 17, Suppl. 7; 1987)
Microbiological	Ochratoxin A (Vol. 56; 1993)
Industrial Chemical	Oil Orange SS (Vol. 8, Suppl. 7; 1987)
Pharmacological	Oxazepam (Vol. 66; 1996)
Fibres Dust	Palygorskite (attapulgite)(long fibres, > 5 micrometres)(Vol. 68; 1997)
Pharmacological	Panfuran S [794-93-4] (containing dihydroxymethylfuratrizine) (Vol. 24, Suppl. 7; 1987)
Pharmacological	Phenazopyridine hydrochloride (Vol. 24, Suppl. 7; 1987)
Pharmacological	Phenobarbital (Vol. 79; 2001)
Pharmacological	Phenolphthalein (Vol. 76; 2000)
Pharmacological	Phenoxybenzamine hydrochloride (Vol. 24, Suppl. 7; 1987)
Industrial Chemical	Phenyl glycidyl ether (Vol. 47, Vol. 71; 1999)
Pharmacological	Phenytoin (Vol. 66; 1996)
Diet	PhIP (2-Amino-1-methyl-6-phenylimidazo[4,5-*b*]pyridine) (Vol. 56; 1993)
Pesticide	Polychlorophenols and their sodium salts (mixed expo.) (Vol. 41, Suppl. 7, Vol. 53, Vol. 71; 1999)
Industrial Chemical	Ponceau MX (Vol. 8, Suppl. 7; 1987)
Industrial Chemical	Ponceau 3R (Vol. 8, Suppl. 7; 1987)

Table 3: IARC Possible Human Carcinogens (Group 2B, continued)

Category	Agents and groups of agents
Industrial Chemical	Potassium bromate (Vol. 73; 1999)
Hormone	Progestins (Suppl. 7; 1987)
Hormone	Progestogen-only contraceptives (Vol. 72; 1999)
Industrial Chemical	1,3-Propane sultone (Vol. 4, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	beta-Propiolactone (Vol. 4, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	Propylene oxide (Vol. 60; 1994)
Pharmacological	Propylthiouracil (Vol. 79; 2001)
Fibres Dust	Refractory ceramic fibres (Vol. 43, Vol. 81; 2002)
Pharmacological	Riddelliine (Vol. 10, Suppl. 7, Vol. 82; 2002)
Diet	Safrole (Vol. 10, Suppl. 7; 1987)
Microbiological	*Schistosoma japonicum* (infection with) (Vol. 61; 1994)
Pesticide	Sodium *ortho*-phenylphenate (Vol. 73; 1999)
Fibres Dust	Special-purpose fibres such as E-glass & '475' glass fibres (Vol. 81; 2002)
Diet	Sterigmatocystin (Vol. 10, Suppl. 7; 1987)
Pharmacological	Streptozotocin (Vol. 17, Suppl. 7; 1987)
Industrial Chemical	Styrene (Vol. 60, 82; 2002)
Pesticide	Sulfallate (Vol. 30, Suppl. 7; 1987)
Pharmacological	Surgical implants and other foreign bodies (Vol. 74; 1999):
Industrial Chemical	Tetrafluoroethylene (Vol. 19, Suppl. 7, Vol. 71; 1999)
Industrial Chemical	Tetranitromethane (Vol. 65; 1996)
Pharmacological	Thioacetamide (Vol. 7, Suppl. 7; 1987)
Industrial Chemical	4,4'-Thiodianiline (Vol. 27, Suppl. 7; 1987)
Industrial Chemical	Titanium dioxide (Vol. 47, Vol. 93; in preparation)
Pharmacological	Thiouracil (Vol. 79; 2001)
Industrial Chemical	Toluene diisocyanates (Vol. 39, Suppl. 7, Vol. 71; 1999)
Pharmacological	Trichlormethine (Trimustine hydrochloride) (Vol. 50; 1990)
Diet	Trp-P-1 (3-Amino-1,4-dimethyl-5*H*-pyrido[4,3-*b*]indole) (Vol. 31, Suppl. 7; 1987)
Diet	Trp-P-2 (3-Amino-1-methyl-5*H*-pyrido[4,3-*b*]indole) (Vol. 31, Suppl. 7; 1987)
Industrial Chemical	Trypan blue (Vol. 8, Suppl. 7; 1987)
Pharmacological	Uracil mustard (Vol. 9, Suppl. 7; 1987)
Industrial Chemical	Urethane (Vol. 7, Suppl. 7; 1987)
Metals	Vanadium pentoxide (Vol. 86; in preparation)
Industrial Chemical	Vinyl acetate (Vol. 63; 1995)
Industrial Chemical	4-Vinylcyclohexene (Vol. 60; 1994)
Industrial Chemical	4-Vinylcyclohexene diepoxide (Vol. 60; 1994)
Pharmacological	Zalcitabine (Vol. 76; 2000)
Pharmacological	Zidovudine (AZT) (Vol. 76; 2000)
Industrial Chemical	Bitumens, extracts of steam-refined and air-refined (Vol. 35, Suppl. 7; 1987)
Diet	Carrageenan, degraded (Vol. 31, Suppl. 7; 1987)
Industrial Chemical	Chlorinated paraffins of average carbon chain length C12 and average degree of chlorination approximately 60% (Vol. 48; 1990)
Diet	Coffee (Vol. 51; 1991)
Industrial Chemical	Diesel fuel, marine (Vol. 45; 1989)
Combustion Product	Engine exhaust, gasoline (Vol. 46; 1989)
Industrial Chemical	Fuel oils, residual (heavy) (Vol. 45; 1989)
Industrial Chemical	Gasoline (Vol. 45; 1989)
Diet	Pickled vegetables (traditional in Asia) (Vol. 56; 1993)
Industrial Chemical	Polybrominated biphenyls (Vol. 41, Suppl. 7; 1987)
Pesticide	Toxaphene (Polychlorinated camphenes) (Vol. 79; 2001)
Microbiological	Toxins derived from *Fusarium moniliforme* (Vol. 56; 1993)
Metals	Welding fumes (Vol. 49; 1990)
Exposure Circumstance	Carpentry and joinery (Vol. 25, Suppl. 7; 1987)
Exposure Circumstance	Cobalt Metals without tungsten carbide (Vol. 86; 2006)
Exposure Circumstance	Dry cleaning (occupational exposures in) (Vol. 63; 1995)
Exposure Circumstance	Printing processes (occupational exposures in) (Vol. 65; 1996)
Pharmacological	Talc-based body powder (perineal use of) (Vol. 93; in preparation)
Exposure Circumstance	Textile manufacturing industry (work in) (Vol. 48; 1990)

Notes on categories
Diet: Dietary agents and naturally occurring contaminants (excludes pesticides)
Industrial Chemical: Industrial chemicals and related contaminants or by-products (excludes pesticides)

Draft Budget

Category	Item	Year One
Workstations	Desks/Workstations (10)	$15,000
	Chairs (10)	$6,000
	Desk-top Computers (10)	$35,000
	Laptop Computers (4)	$16,000
	Software (750 per computer)	$7,500
	Chairs - Guest (12)	$3,000
	Chairs - Meeting Room (8)	$2,000
	Meeting Room Table	$1,200
	Filing Cabinets	$3,200
	Book Shelves	$2,500
	Cell phones	$600
	Office Start up Items Misc	$5,000
Space Rental (a)	EG: ISPHR Space	$30,000
Website (b)	Website - creation	$12,000
On-Going Admin	Office Supplies	$1,500
	Photocopying	$3,000
	Photocopy Rental	$1,500
	Telephones, incl long dist.	$12,000
	Website - hosting	$500
Permanent Staff (C)	Executive Director ($80,000/yr)	$80,000
	Occupational Hygienist ($60,000/yr)	$45,000
	Environmental Scientist ($60,000/yr)	$45,000
	Database Manager ($55,000/yr)	$55,000
	KTE Specialist ($60,000/yr)	$60,000
	Hygiene Tech (45,000/yr)	$30,000
	GIS Tech (45,000/yr)	$30,000
Start-up Staff (d)	Project coordinator	$50,000
	Hygienist/Env Scientist (3@0.5)	$90,000
	Research Tech (3@0.5)	$82,500
	Library asst (0.5)	$30,000
Staff Benefits	All Staff @ 20% Average	$119,500
Students (e)	PhD Student	$30,000
	MSc Student 1	$20,000
	MSc Student 2	$20,000
SOEH Admin Support	Finance Support	$10,000
	IT support	$12,000
	Administrative Support - HR etc	$10,000
	Scientific Director (course/admin buy-out)	$20,000
Other	Purchase of reference materials & reports	$20,000
	Statistics Canada Data **(f)**	$75,000
	Launch - press conference, reception, promotional packages **(g)**	$20,000
	First meeting of the collaborative network	$32,000
	Brochure & letterhead	$7,500
	Stipends for scientific advisors **(h)**	$20,000
Travel	Meeting of scientific advisors	$25,000
	Travel to conferences **(i)**	$18,000
	Travel within Canada **(j)**	$86,000
Total		**$1,300,000**

Budget Notes

a) Initially the staff of NOECSU will be housed within the School of Occupational and Environmental Hygiene and the Population Health Learning Observatory at UBC. However, as the staff grows we anticipate eventually renting space adjacent to the university.

b) The website will include both a public area and an area for use by the collaborative network to share information. The costs include both development and translation.

c) The permanent staff will be recruited in stages starting with the more senior staff.

d) During the start-up phase a large number of staff will be recruited to perform literature and web searches and request data and reports that will be used to estimate exposures. A library assistant will help organize these resources.

e) Graduate students will be recruited to help explore innovative methods for collecting and using data. The stipends will help recruit top students to the field of cancer prevention.

f) Because of the NOECSU affiliation with the university some Stats Can data will be available free of charge. However, other data, such as detailed labour force data, will need to be obtained from Stats Can in return for substantial cost recovery fees.

g) In the second half of the first year we will have a press conference and launch to announce the creation of NOECSU. The launch will be held in conjunction with the first meeting of the collaborative network.

h) We will invite ten of the best scientists in Canada with expertise on exposure to carcinogens to be members of our scientific advisory committee. The best scientist who are also concerned about public health are extremely busy and in high demand. In return for their participation we will offer each a $2000 stipend as a sign of appreciation.

i) Staff will attend national conferences both to learn of the latest developments in the relevant scientific and policy areas and to disseminate information about NOECSU to raise awareness in the scientific and professional communities. This would include meetings of the Canadian Public Health Association, the Canadian Association for Research on Work and Health, and the Canadian Society for Epidemiology and Biostatistics.

j) In the first year NOECSU staff will travel to Edmonton, Winnipeg, Toronto, Ottawa, Montreal, Halifax, St. Johns, Yellow Horse, Iqaluit, and other cities across Canada to meet with experts, identify regional resources, and help establish the national network. Each trip would include two staff members and last from several days to several weeks. Other trips would include travel to national meetings of the NCEOE or other CPACC meetings to present reports.