

Losing the War Against Cancer

Who's to Blame and What to do about it

by Samuel S. Epstein

In 1971, the US Congress launched a War on Cancer. Sixteen years and billions of dollars later, the US is still in the grips of a cancer epidemic—and the number of victims grows every year. Much of the money has been squandered on a fruitless search for cancer "cures". Little or nothing has been done to prevent exposure to carcinogenic chemicals in the environment—this despite ample evidence that chemical pollution of our air, water, and food is the major cause of cancer. On the contrary, government, industry and a small coterie of scientists have combined to stymie efforts to introduce preventive measures, such as strict pollution control standards. But cancer remains a preventable disease. It is up to citizens to push for action.

Cancer is now a major killing disease in the industrialised world and its rates are sharply rising.¹ In contrast, there have been major reductions in deaths from cardiovascular disease, still the number one killer in the US, probably because of a recent decline in smoking and attention to diet and exercise.

With over 900,000 new cases and 450,000 US deaths last year, cancer has now reached epidemic proportions with an incidence of one in three and a mortality of one in four. Analysis of overall cancer rates, standardised for age, sex and ethnicity, has demonstrated a steady increase in cancer rates since the 1930s. In recent years, the incidence rate has risen sharply, by some 2 per cent a year, with mortality rates rising by 1 per cent a year.

Striking confirmation of these recent increases comes from estimates of the lifetime probability of getting cancer for people born at different times. For white males born in 1975 to 1985 for instance, the probability of developing cancer has risen from 30 to 36 per cent, whilst the probability of dying from cancer has risen from 19 to 23 per cent. Such increases in overall cancer rates are also reflected in the increasing incidence of cancers of the lung, breast, colon, prostate, testis, urinary bladder, kidney, and skin, and of malignant melanoma and lymphatic/hematopoietic malignancies, including non-Hodgkin's lymphoma.² Lung cancer is responsible for about one-third of the overall recent increase in incidence rates. It should be stressed that some 75 per cent of all cancer deaths occur in people over 55 years, and that recent increases are largely restricted to these ages.

Static Cure Rates

The overall cancer "cure rate", as measured by survival for over five years following diagnosis, is currently 50 per cent for whites but only 38 per cent for

blacks. There is no evidence of substantial improvements in treatment over the last few decades, during which the five-year survival and age-adjusted mortality rates for the major cancer killers (lung, breast and colon) and for most other organs, have remained essentially unchanged. The only improvements have been for cancer of the cervix, and for relatively rare cancers, such as testicular seminomas, Hodgkin's disease and childhood leukemias treated with radiation and/or chemotherapy. Apart from immediate toxicity, such treatment, while effective, can increase the subsequent risk of developing a second cancer by up to 100 times.

Increasing Carcinogenic Exposures

Cancer is an age-old and ubiquitous group of diseases. Its recognised causes and influences are multifactorial and include natural environmental carcinogens (such as aflatoxins and sunlight), lifestyle factors, genetic susceptibility, and more recently industrial chemicals. Apart from modern lifestyle factors, particularly smoking, increasing cancer rates reflect exposure to industrial chemicals and run-away modern technologies whose explosive growth has clearly outpaced the ability of society to control them. In addition to pervasive changes in patterns of living and diet, these poorly controlled technologies have induced profound and poorly reversible environmental degradation, and have resulted in progressive contamination of air, water, food and workplaces with toxic and carcinogenic chemicals, with resulting involuntary exposures.

With the dawn of the petrochemical era in the early 1940s, by when technologies including fractional distillation of petroleum, catalytic and thermal cracking and molecular splicing became commercially established, the annual US production of synthetic organic chemicals was about one billion pounds. By the 1950s, this had reached 30 billion pounds, and by the 1980s over 400 billion pounds annually. The overwhelming majority of these industrial chemicals has never been adequately tested—if tested at all—for chronic toxic, carcinogenic, mutagenic and teratogenic effects, let

Samuel S. Epstein, MD is Professor of Occupational and Environmental Medicine at the School of Public Health, University of Illinois Medical Centre, Chicago. Author of *The Politics of Cancer* (Sierra Books and Anchor/Doubleday) and co-author of *Hazardous Waste in America* (Sierra Books). He is an associate editor of *The Ecologist*.

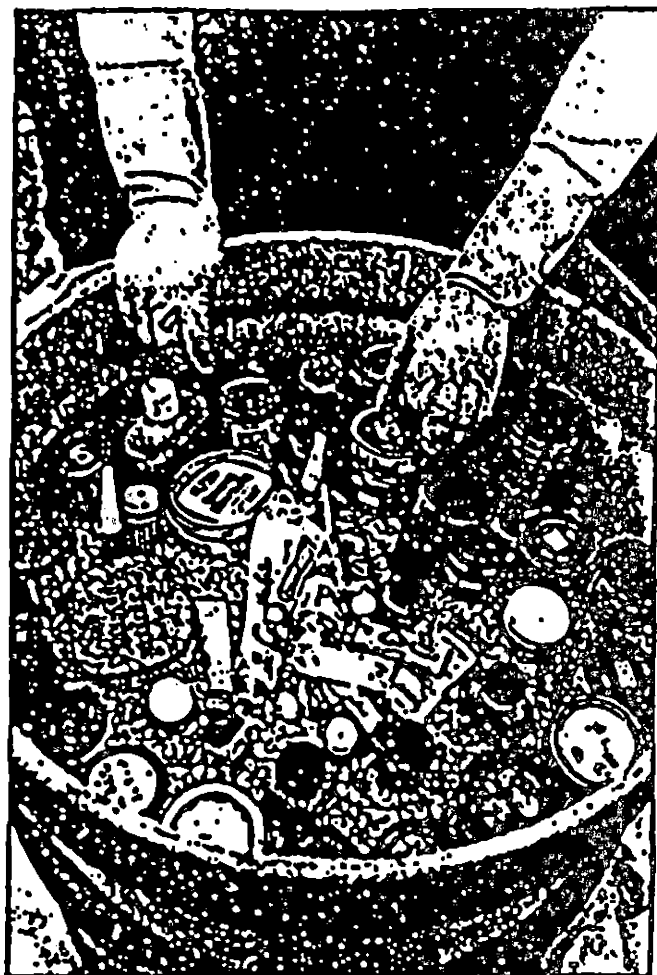
alone for ecological effects, and much of the limited available industrial data is at best suspect.

Occupational exposure to industrial carcinogens has clearly emerged as a major risk factor for cancer.² The National Institute for Occupational Safety and Health (NIOSH) estimates that some 10 million workers are now exposed to 11 high volume carcinogens. Five to 10-fold increases in cancer rates have been demonstrated in some occupations. Also persuasive are British data on cancer mortality by socio-economic class, largely defined by occupation, which show that the lowest class, particularly among males, has approximately twice the cancer mortality rate of the highest class.

Living near petrochemical and certain other industries in highly urbanised communities increases cancer risks, as demonstrated by the clustering of excess cancer rates. High levels of toxic and carcinogenic chemicals are deliberately discharged by a wide range of industries into the air of surrounding communities. Fall-out from such toxic air pollutants is also an important source of contamination of surface waters, particularly the Great Lakes. While there still are no regulatory requirements in the US for reporting and monitoring these emissions, unpublished government estimates indicate that they are in excess of 3 billion pounds annually.⁴

Another example of the effects of run-away technology is the hazardous waste crisis. The volume of hazardous wastes disposed of every year in the USA has risen from under 1 million tons in 1940 to well over 300 million tons in the 1980s—more than 1 ton per US citizen per year. The industries involved—fossil fuel, metal mining and processing, nuclear, and petrochemical—have littered the entire land mass of the US with some 50,000 toxic waste landfills—20,000 of which are recognised as potentially hazardous—170,000 industrial impoundments (ponds, pits and lagoons), 7,000 underground injection wells, not to mention some 2.5 million underground gasoline tanks, many of which are leaking. Not surprisingly, an increasing number of rural and urban communities have found themselves located on or near hazardous waste sites, or downstream, down-gradient or down-wind from such sites. Particularly alarming is growing evidence of contamination of ground water from hazardous waste sites, contamination which poses grave hazards for centuries to come. Once contaminated, ground waters are difficult, and sometimes impossible, to clean up.

Environmental contamination with highly potent carcinogenic pesticides has reached alarming and pervasive proportions. Apart from high level exposure of workers in manufacturing, formulating and applying industries, the contamination of ground and surface waters has become commonplace. Residues of ethylene dibromide in excess of 1,000 ppb in raw grains, cereals and citrus fruits have been well known to industry and the Environmental Protection Agency (EPA) for as long as ten years after its very high carcinogenicity was first demonstrated; not until 1984 however, did EPA develop a 30 ppb tolerance, which was rejected by the Commonwealth of Massachusetts and the States of New York and Florida, and replaced by much lower and less hazardous levels. While the exact numbers are uncertain, it is probable that tens of millions of homes



Household chemicals being packed into drums for disposal as hazardous wastes. Little is done to limit everyday exposure to such chemicals, few of which have been tested for their carcinogenic properties.

nationwide are contaminated with varying levels of chlordane/heptachlor, pesticides still registered by EPA or termite treatment. It should be noted that, on the basis of extensive hearings some 14 years earlier, the Agency concluded that exposure to chlordane/heptachlor posed an "imminent hazard" due to cancer (besides other chronic toxic effects) leading to a subsequent ban on their agricultural uses.

Much cancer today reflects events and exposures in the 1950s and 60s. The production, use and disposal of synthetic organic and other industrial carcinogens was then minuscule in terms of volume when compared to current levels, which will determine future cancer rates for younger populations now exposed. There is every reason to anticipate that even today's high cancer rates will be exceeded in coming decades.

Concern has understandably focused on increasing cancer rates but these substantially underestimate the extent and scope of the public health effects of environmental pollutants. Only a small proportion of the tens of thousands of petrochemicals in commerce, well under 500, are carcinogenic. However, many of these, together with other non-carcinogenic petrochemicals, can induce other chronic toxic effects, including neurological, respiratory, reproductive, hepatic and probably immunological diseases, whose true causation is generally not suspected let alone investigated.

"Industry has used various strategies to con the public...and divert attention from their own responsibility for the cancer epidemic."

How Industry Fights Regulation

Twentieth century industry has aggressively pursued short-term economic goals, uncaring or unmindful of harm to workers, local communities and the environment. So far, industry has shifted responsibility for the damage it has caused onto society-at-large. Belated government efforts to control polluting industries have generally been neutralised by well-organised and well-financed opposition. With the exception of special purpose legislation for drugs, food additives and pesticides, there were no regulatory requirements for pre-testing industrial chemicals until the 1976 Toxic Substance Control Act, legislation which the industry had stalled for years, and which is now honoured more in the breach than in the observance.

Apart from the failure to pre-test most chemicals, a key characteristic of industry's anti-regulatory strategy has been the generation of self-serving and misleading data on toxicology and epidemiology, and on regulatory costs and cost-benefit analyses. The record of such unreliable and often fraudulent data is so extensive and well-documented as to justify the presumption that much industry data must be treated as suspect until proven otherwise.

Attempts by the Carter Administration to develop comprehensive, 'generic' regulation of occupational carcinogens, later reversed by the Reagan Administration, were attacked by the Manufacturing Chemists Association, which created the American Industrial Health Council to organise opposition. Such reactions generally reflect a short-sighted preoccupation with perceived self-interest rather than with efficiency and economy. The virtual uniformity of industry opposition to regulation is in marked contrast to the heterogeneity of the industries involved, both in terms of size and the diversity of their interests. Regulation has, in fact, generally resulted in substantial improvements in industrial efficiency and economy, particularly in large industries, by forcing development of technologies for recovery and recycling of valuable resources. A deplorable result of regulation, however, has been, and continues to be, the export of the restricted product or process to the so-called lesser developed countries.¹

Apart from well-documented evidence on control and manipulation of health and environmental information, industry has used various strategies to con the public into complacency and divert attention from their own recklessness and responsibility for the cancer epidemic. Key among these is the 'blame-the-victim' theory of cancer causation, developed by industry scientists and consultants and a group of pro-industry academics, and tacitly supported by the 'cancer establishment'. This theory emphasises faulty lifestyle, smoking, and fatty diet, sun bathing or genetic susceptibility, as the major

causes of preventable cancer, while trivialising the role of involuntary exposures to occupational and environmental carcinogens. Another misleading diversion is the claim that there is no evidence of recently increasing cancer rates other than lung cancer, for which smoking is given the exclusive credit. While the role of lifestyle is obviously important and cannot be ignored, the scientific basis of this theory is as unsound as it is self-serving. Certainly, smoking is a major, but not the only, cause of lung cancer. But a wealth of evidence clearly incriminates the additional role of exposure to occupational carcinogens and carcinogenic community air pollutants. Hence, some 20 per cent of lung cancers occur in non-smokers; there have been major recent increases in lung cancer rates in non-smokers; an increasing percentage of lung cancer is of a histological type (adenocarcinoma) not usually associated with smoking; high lung cancer rates are found with certain occupational exposures independent of smoking; and excess lung cancer rates are found in communities where certain major industries are located. The chemical industry thus clearly uses tobacco as a smoke screen to divert attention from the role of carcinogenic chemicals in inducing lung cancer, besides other cancers.

When it comes to diet, the much touted role of high fat consumption, while clearly linked to heart disease, is based on tenuous and contradictory evidence with regard to breast and colon cancers. The evidence certainly does not justify the wild claims by lifestyle theorists that some 30 to 40 per cent of all cancers are due to faulty diet. For instance, a 1982 National Academy of Sciences report concluded that "... in the only human studies in which the total fibre consumption was quantified, no association was found between total fibre consumption and colon cancer." Similarly, a large scale 1987 study, based on the eating habits of nearly 90,000 nurses, concluded that "... there is no association between dietary fat and breast cancer."

Another illustration of grossly misleading strategies relates to the identification of chemical carcinogens. When a particular chemical or product is threatened with regulation on the basis of animal carcinogenicity tests, the industry invariably challenges the significance of these tests, while routinely using negative test results as proof of safety. At the same time industry insists on the need for long-term epidemiological investigations to obtain definitive human evidence of carcinogenicity. To test this apparent reliance on direct human evidence, researchers at Mt Sinai Hospital in New York compiled a list of some 100 chemicals accepted as carcinogenic on the basis of animal tests, but for which no epidemiological information is available, and sent this list to some 80 major chemical industries. Respondents were asked whether any of the listed carcinogens were in use and, if so, whether epidemiological studies had been conducted, whether they were being conducted, or whether it was intended to conduct them in the future, and if not, why not. The responses were revealing. The great majority of those industries using particular carcinogens replied that they had done no epidemiological studies, were not doing any, and didn't intend to do any for various reasons, including alleged difficulty, impracticality, expense, or because of their belief that these



Asbestos being stripped from schools. For years the industry refused to acknowledge the carcinogenicity of asbestos, even going so far as to suppress incriminating data. Even today, "white" asbestos is in widespread use, despite being a potent carcinogen.

chemicals could not possibly be carcinogenic to humans. A perfect catch-22: knock the animal tests and insist on human studies, but make sure that the human studies are never done.

Industry positions are vigorously advocated by trade associations, such as the Chemical Manufacturers Association, public relations firms, such as Hill and Knowlton, front organisations, such as the American Council on Science and Health (the contributions of whose director, Whelan, have been aptly characterised as "voodoo science"), and lay writers such as Efron (who charges that the American scientific community has been terrorised into submission by environmental "apocalypses"). Disturbingly, another major source of support for anti-regulatory strategies is a stable of academic consultants who advance the industry position in arenas including the scientific literature, federal advisory committees, and regulatory and congressional hearings.⁶

Government and the Cancer Epidemic

Presidents play a powerful role in setting national public health priorities, not unnaturally reflecting their own political agendas. Reagan, however, is unique in having run for office on an ideological anti-regulatory platform, and in having then systematically used his office to implement this ideology, often in contravention to the spirit and letter of the law. Reagan has thus neutralised legislative mandates on controls of toxic and carcinogenic exposure by direct frontal assaults on regulatory agencies.⁷ Strategies employed include: staffing senior positions with unqualified, ideologically selected

staff hostile to their agency mandates; budget cutting; insisting on formal cost-benefit analyses which focus on industry costs with little (or biased) consideration of the costs of failing to regulate and which effectively stall the regulatory process; illegal, behind closed doors meetings with industry; and making regulation dependent on the Office of Management and Budget with its subservience to the White House.

An example is the White House decision to block the \$1.3 million 1984 request by the National Institute for Occupational Safety and Health (NIOSH) to notify some 200,000 workers of risks from previously undisclosed exposure to workplace carcinogens, as identified in some 60 government studies, in order to enable medical follow-up and early diagnosis of cancer. The reason for this refusal of modest funding seems to have been a desire to shield corporations from possible legal claims.⁸ Such a track record justifies the conclusions of a 1984 Congressional Study Group report that "efforts to protect public health and the environment from the dangers of toxic pollution have ground to a standstill under the Reagan Administration . . . (which was charged with being) a public health hazard."

The US Congress has become sensitive to public health and environmental concerns, as exemplified in a plethora of legislation in recent decades.⁹ Such legislation has evolved fragmentarily, reflecting particular interests and priorities. New laws have focused on individual environmental media—air, water, food or the workplace—or on individual classes of products or contaminants, such as pesticides or air pollutants, with little or no consideration of needs for more comprehensive

and integrated approaches. Furthermore, the legislative language has traditionally been ambiguous, thus allowing maximal regulatory discretion to bureaucracies which in some instances, have subsequently become closely associated with or even "captured" by the regulated industries. A noteworthy exception is the 1958 Delaney Amendment to the Federal Food Drug and Cosmetic Act, with its absolute prohibition against the deliberate introduction of any level of carcinogen into the food supply. Even so, the Reagan FDA is re-defining the Delaney Amendment to allow carcinogenic food additives at levels alleged to be devoid of significant risk.

Congress has also tended to abdicate decision-making to scientific authority (or perceived authority), rather than questioning its basis in the open political arena. Of particular importance was passage of the 1971 Cancer Act in response to orchestrated pressures from the "cancer establishment", the National Cancer Institute (NCI), American Cancer Society (ACS), and clinicians aggressively pushing chemotherapy as a primary cancer treatment. The cancer establishment misled Congress into the unfounded and simplistic view that the cure for cancer was just around the corner, provided that Congress made available massive funding for cancer treatment research. The Act did just this, while failing to emphasise needs for cancer prevention, and also gave the NCI virtual autonomy from the parent National Institutes of Health, while establishing a direct chain of command between the NCI and the White House. Some 16 years and billions of dollars later, Congress still has not yet appreciated that the poorly-informed special interests of the cancer establishment have minimised the importance of critically needed cancer prevention efforts, and have singularly failed to support such efforts. Nor has Congress appreciated the long overdue need for an investigation into the conduct and priorities of the NCI. Given the heterogeneity of congressional interests, the complexity of the problem involved, the heavy lobbying by industry, the indifference of the general scientific community and the well orchestrated pressures of the cancer establishment, it is not surprising that Congress has still to recognise that we are losing the war against cancer.

Until recently, state governments have largely deferred to federal authority, exercising relatively minor roles in cancer prevention. Reagan's federal de-regulatory efforts have begun to reverse this relationship. Regulatory actions against carcinogens are now emerging at the state level, such as the banning of chlordane/heptachlor and aldrin/dieldrin for termite treatment by Massachusetts and New York, the banning of daminozide (Alar) for apple ripening and tough restrictions on ethylene dibromide food tolerances by Massachusetts, and the introduction of informative occupational labelling laws by various states, such as the "right-to-know" workplace legislation of New Jersey.

In some cases, such state initiatives have evoked federal preemption by restricted regulations—such as the 1983 Hazard Communication Standard of the Occupational Safety and Health Administration—despite Reagan's avowed commitment to getting big government off the backs of the people. In February

1987, a coalition of labour and citizen organisations asked the US Court of Appeals to enforce its 18 month-old order directing OSHA to expand coverage of its communication standard from manufacturing to all workers. In an apparent about face turn, the Chemical Manufacturers Association is supporting the expansion in conformity with regulations developed for various states.

The Cancer Establishment: Standing in the Way of Prevention

The cancer establishment still continues to mislead the public and Congress into believing that "we are winning the war against cancer", with "victory" possible only given more time and money. The NCI and ACS also insist that there have been major advances in treatment and cure of cancer, and that there has been no increase in cancer rates (with the exception of lung cancer which is exclusively attributed to smoking). Yet, the facts show just the contrary.

The cancer establishment periodically beats the drum to announce the latest "cancer cure", and dramatic "breakthrough". These announcements reflect optimism and wishful thinking, rather than reality. The extravagant and counterproductive claims for Interferon as the magic cancer bullet of the late 1970s have been followed by the unpublicised recognition of its limited role in cancer treatment. The latest NCI "breakthrough" claims for interleukin-2 as a cancer cure are grossly inflated and rest on questionable data. These claims fail to reflect the devastating toxicity and lethality of this drug, and gloss over the high treatment costs, which can run into six figures.

Equally questionable are claims by the NCI and ACS that overall cancer survival rates have improved dramatically over recent years. These claims, based on "rubber numbers" according to one prominent critic, ignore factors such as "lead-time bias", earlier diagnosis of cancer resulting in apparently prolonged survival even in the absence of any treatment, and the "over-diagnosis" of essentially benign tumours, particularly those of the prostate, breast and thyroid, as malignant. Recently the director of the NCI, DeVita, resorted to blaming community doctors for using inadequate doses of chemotherapy drugs as the "real" reason why cancer cure rates are no better than they are.

The NCI misrepresentations are well reflected in budgetary priorities which are largely and disproportionately directed to cancer treatment research—to the neglect of cancer prevention. Even the very modest funding on cancer prevention is largely directed to endorsing industry's "blame-the-victim" concept of cancer causation. Thus, the NCI exaggerates the role of tobacco for a wide range of other cancers besides lung cancer, and treats as fact the slim and contradictory evidence relating diet to colon, breast, and other cancers.

Apparently still oblivious to mounting criticisms, the NCI continues vigorously to propagate these misrepresentations. A 1986 NCI document on cancer control objectives, the executive summary of which fails to even mention environmental and occupational exposures to carcinogens and focuses on diet and tobacco as the

major causes of cancer, rashly promises that annual cancer mortality rates could be reduced by 50 per cent by the year 2000.

More disturbing than indifference to cancer prevention is evidence uncovered in September 1982 by Congressman Dave Obey that the NCI has pressured the International Agency for Research on Cancer (IARC) funded in part by the NCI, to downplay the carcinogenicity of benzene and formaldehyde in IARC monographs which review and rank the carcinogenicity data on industrial and other chemicals. Such evidence is noteworthy since, contrary to the scientific literature and its own explicit guidelines, IARC has also downgraded the carcinogenicity of other carcinogenic industrial chemicals, such as the pesticides aldrin/dieldrin and chlordane/heptachlor, and the solvents trichloroethylene and perchloroethylene."

Over the last decade, consistent with its low priorities for cancer prevention, the NCI has played little or no role in providing the data base in support of critical federal or state legislation and regulation on cancer prevention. Examples where NCI scientific input could have been reasonably expected include attempts to prevent the exposure of much of the US population to carcinogenic pesticides, such as ethylene dibromide residues in food or chlordane/heptachlor in the air of a high percentage of the many million homes treated for termites, and also exposure to industrial discharges of carcinogenic air pollutants or drinking water contaminants.

Following nearly a decade of fruitless discussions with the ACS, at a February 7, 1984 press conference, a national coalition of major public interest and labour groups, headed by the Centre for Science in the Public Interest (and myself), and supported by some 24 independent scientists, charged that the ACS

"is doing virtually nothing to help reduce the public exposure to cancer causing chemicals... Despite its promises to the public to do everything to 'wipe out cancer in your lifetime', the ACS failed to make its voice heard in Congress and the regulatory arena, where it could be a powerful influence to help reduce public exposure to carcinogens."

More specific criticisms included the following:

- ACS fails to support, and at times has been hostile to, critical legislation that seeks to reduce or eliminate exposure to environmental and occupational carcinogens. For example, ACS refuses to join a coalition of major organisations, including the March of Dimes, the American Heart Association, and the American Lung Association, to support the Clean Air Act. ACS has rejected requests from Congressional subcommittees, unions, and environmental organisations to support their efforts to ban or regulate a wide range of occupational and environmental carcinogens. Giant corporations, which profit handsomely while they pollute the air, water and food with cancer causing chemicals, must be greatly comforted by the ACS's silence.
- ACS's record on supporting efforts to ban carcinogens is dismal. Often ACS's statements are expressly or implicitly hostile to regulation.
- ACS's approach to cancer prevention largely reflects a "blame the victim" philosophy, which emphasises faulty lifestyles, rather than workplace or environmental carcinogens. For instance, ACS blames the higher incidence of cancer among

blacks primarily on their diet and smoking habits, which diverts attention from the fact that blacks work in the dirtiest, most hazardous jobs, and live in the most polluted communities.

A few days after the press conference, ACS announced a "new set of policies", passing resolutions for the improved regulation of such chemicals as asbestos and benzene, and the cleaning up of toxic waste sites. However, there has been no evidence of any real change of heart in the ACS, since then.

The Lifestyle Academics

The lifestyle academics are a group of conservative scientists including Sir Richard Doll, the Warden and Director of the industry-financed Green College, Oxford, his protégé R. Peto, a statistician also from Oxford, and more recently Bruce Ames, a California geneticist. The purist pretensions of "the lifestylers" for critical objectivity are only exceeded by their apparent indifference to or rejection of a steadily accumulating body of information on the permeation of the environment and workplace with industrial carcinogens, and the impact of such involuntary exposures on human cancer.

Consciously or subconsciously, these academics have become the mouthpiece for industry interests, urging regulatory inaction and public complacency. Among the more noteworthy contributions of these academics is a series of publications claiming that smoking and fatty diet are each responsible for 30-40 per cent of all cancers; that sunlight, drugs and personal susceptibility account for another 10 per cent, leaving only a few per cent unaccounted for which, just for want of any other better reason, was then ascribed to occupation. According to the lifestylers, this then proves that occupation is an unimportant cause of cancer, which really does not warrant much regulatory concern.

Apart from circulatory referencing each other as authority for these wild guesses, the lifestylers have never attempted to develop any estimates of how many workers are exposed to defined levels of specific carcinogens. Without such estimates there is no way of attempting to determine just how much cancer is due to occupational exposure.

The lifestyle theory was further advocated in a 1981 report dealing with causes of cancer in the USA by Doll and Peto where they denied evidence of increasing cancer rates other than for lung cancer, which was largely ascribed to tobacco without adequate consideration of the importance of community and occupational exposure to carcinogens.¹² To reach their misleading conclusions on static cancer rates, Doll and Peto excluded from analysis people over the age of 65 and blacks, those groups with the highest and increasing cancer mortality rates. Not content with such manipulation, they claimed that occupation was only responsible for some 4 per cent of all cancers, without apparent consideration of a wide range of recent studies dealing with the carcinogenic effects of such exposures.¹³ This wild 4 per cent guess was matched by "guesstimates" that diet was determinant in some 35 per cent of all cancers. To trivialise the significance of animal carcinogenicity data on industrial chemicals, Doll and

up bond by New York, the Environmental Quality Bond Act of 1986; and passage of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, by California.

Proposition 65, masterminded by the Sierra Club and the Environmental Defense Fund and supported by a coalition of Californian public interest citizen and labour groups, is a sophisticated referendum which imposes tough financial penalties on industries knowingly discharging carcinogens into the drinking water supplies, and which makes mandatory the full public disclosure of such discharges by industry and state officials. A vocal opponent of Proposition 65 was Bruce Ames, who nonetheless failed to impress the California public with his lifestyle advocacy and his trivialising the significance of carcinogens in drinking water. Potential opposition by the petrochemical industry was anticipated and muted by the earmarking of some 50 per cent of revenues from fines for the state superfund budget. However, Governor Deukmejian, responsive to special interest lobbying, has recently neutralised the scope of the new legislation by restricting its scope only to epidemiologically confirmed carcinogens. This restriction is now under legal challenge. Irrespective of the outcome of this challenge, Proposition 65 has excited national interest and is being used as a model for similar regional initiatives, such as the 1987 Safe Drinking Water Act of New York which is currently being drafted.

Among early Congressional priorities should be enactment of comprehensive white collar crime legislation. This would impose tough sanctions on individual executives, managers and professionals of industries found guilty of wilful "non-disclosure" of information on hazards to workers, local communities and the nation. White collar crime legislation should also be extended to US and multinational corporations which export carcinogenic products or processes which have been banned or regulated in the US to "lesser developed countries", especially in the absence of full disclosure of hazards directed to ultimate users and consumers. Attention should also be directed to developing comprehensive new "cradle-to-the-grave" legislation as the basis for regulating toxic and carcinogenic chemicals. Such legislation can be designed to complement regulation by the judicious application of marketplace pressures, in the form of financial incentives and disincentives designed to wean industry away from unsafe practices, and to ensure that responsible industry is not penalised or subjected to unfair competition. At present, other than the prospect of toxic tort litigation, there are virtually no incentives for industry to develop safer new products and processes. Legislation is needed to develop federal funding for research and development into such benign technologies and to ensure that they are closely coordinated with environmental energy and resource policies.

A critical legislative priority is the amendment of the National Cancer Act to give the highest possible priority to cancer prevention; to redress the historical imbalance existing in the NCI between cancer prevention and research on diagnosis and treatment; and also to insulate the NCI from direct Presidential influence. In addition

to replacing the NCI's director, De Vita, who, in spite of his contrary protestations, has been indifferent if not hostile to cancer prevention efforts and who has played a major role in perpetrating the myth that we are winning the war against cancer, senior NCI staff should be restructured and boosted by professionals competent in environmental and occupational cancer and committed to cancer prevention. The National Cancer Advisory Board should be reconstituted with a balanced mix of independent cancer prevention professionals, representatives of public interest and labour organisations and concerned citizens, and should be subject to close Congressional scrutiny. Such scrutiny should ensure that the institutional resources are largely directed to cancer prevention, that grants and contracts reflect this priority and that NCI staff play a key role in providing the supporting scientific basis for legislative and regulatory cancer prevention efforts at the national and state levels.

Cancer is essentially a preventable disease. Given high national priority, this goal will be achieved.

Based on keynote presentations at the National Safety and Health Conference of the International Association of Machinists, Washington, DC, March 9, 1987, the Fifth National Pesticide Forum of the National Coalition Against the Misuse of Pesticides, Washington, DC, March 21, 1987, and the Conference on Global Development and Environmental Crisis, Friends of the Earth (Sahabat Alam), Penang, Malaysia, April 8, 1987.

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Notes

1. Just by way of quantitative contrast, mortality from AIDS (another eminently preventable disease) although highly alarming, if not catastrophic, is relatively low. About 30,000 cases, more than half already fatal, have been reported since 1981 when the disease was first detected; additionally, it is estimated that 2-3 times as many Americans suffer from advanced symptoms of the AIDS-related complex which often progresses to full-blown AIDS. Rapidly increasing numbers of cases, totalling some 270,000, are projected by 1991.
2. It should, however, be noted that there have been substantial decreases in rates for stomach and cervix, and less so, for rectal cancer.
3. In 1978, a blue ribbon government commission (under the auspices of the then Health, Education and Welfare (HEW) Secretary Callano) estimated, on the basis of the only available exposure data, that up to 38 per cent of all cancers in coming decades would reflect past and continuing exposures to just six high volume occupational carcinogens. In spite of the recognised limitations of these estimates, both in the direction of over-estimating exposure to certain of the named carcinogens, particularly asbestos, and a failure to reflect a wide range of other possibly more significant exposures, their magnitude was surprisingly confirmed by industry consultants, Seaton and Duane of the University of Texas School of Public Health. In a confidential report commissioned by the American Industrial Health Council.
4. The Environmental Protection Agency has diverted attention away from its failure to regulate such toxic emissions, although so authorised under Sec. 112 of the 1970 Clean Air Act, by attempting to shift responsibility to local and state agencies, and by a barrage of poorly supportable claims that indoor air pollution, from pollutants such as cigarette smoking, radon and pesticides, is a more important regulatory target than toxic air emissions. In spite of this near exclusive emphasis on indoor air pollution, EPA will refuse to ban the continued use of such carcinogenic pesticides as Chlordane and Aldrin, both used extensively for domestic termite treatment.
5. Information on such experts is being systematised by Consumer Interpol, a programme of the International Organisation of Con-

- sumers Union (IOCU) based in Penang, Malaysia, which promotes protection for the consumer from dangerous products. The participants in this network are consumer, environmental, health and other citizen groups concerned about unrestricted trade in hazardous substances. Besides the global dissemination of such hazards, the multinational corporations involved are also responsible for the loss of US jobs and their replacement by cheap "expedient" foreign labour.
6. These consultants include: MacMahon, a Harvard epidemiologist who has cleared his contracted studies with industry before submitting them for publication; Demopoulos, a pathologist at the New York University Medical Centre who claims that asbestos and vinyl chloride are weak carcinogens and that the high cancer mortality rates in New Jersey are due to poor treatment by foreign trained doctors in that state; Olson, a clinician at the Pittsburgh University School of Medicine who has testified that benzene cannot be carcinogenic in humans because it does not induce tumours in animals; Hayes, ex-Centre for Disease Control (CDC) and Vanderbilt University School of Medicine, a toxicologist repeatedly on record as rejecting the human significance of animal carcinogenicity data on organochlorine pesticides; and Hartleben, a toxicologist from University of Arkansas Medical School, who in 1980 testified as a government witness that rodents are "good predictors of human cancer risk", and who, as an industry expert, testified just the opposite in 1983.
 7. Such successes of the Reagan Administration at the regulatory level are, however, in striking contrast to its failure to make any impression on the scientific underpinning of public health and environmental regulations. For instance, a 1985 report by the Office of Science and Technology Policy of the White House clearly affirmed such critical tenets as the value of animal carcinogenicity data in extrapolating to human risk, and the inability to set "safe levels or thresholds" for exposure to carcinogens.
 8. On February 26, 1987, hearings were held before the Labour and Human Resources Committee on a bill sponsored by Senator Hatchman to require the Department of Health and Human Services to notify past or present workers known to be at risk of cancer and other occupational diseases. To the annoyance of Republican Committee members, NIOSH officials supported the bill, which was opposed by Administration spokesmen who claimed that it would duplicate existing efforts and generate "too much litigation". The senior dissenting officials received a subsequent "dressing down" from the Administration. However, unexpected support for the bill on March 27, 1987 came from the 3000-member American Electronics Association, a trade group, from IBM, the Digital Equipment Corporation, and from the General Electric Company.
 9. Congress, however, has yet to recognize the need to consider certain industry practices from the perspective of white collar crime. While collar crime legislation has heretofore been exclusively directed to economically motivated crimes with economic consequences, such as anti-trust violations. Efforts, such as the 1979 and 1984 bills by Cong. John Caneyers (H.R. 4973 & 6350), to extend such legislation to economically motivated crimes with public health or environmental consequences, resulting from wilful suppression or "non-disclosure" of risks from hazardous products and processes, have not yet been successful. This is the case in spite of the fact that the consequences of such crimes may be measured in countless cancer deaths.
 10. Interferon is particularly effective, if not often curative, for two rare neoplasms— hairy cell leukaemia and juvenile laryngeal papillomatosis.
 11. Apart from the noted exceptions, the IARC monographs are unique and well systematised compendia of data on the chronic toxicity, carcinogenicity and uses of a wide range of industrial and other chemicals.
 12. According to a founding fellow, Hermann, Green College was established in 1978 as a "special point of entry for industrial interests wishing to collaborate with university departments in research".
 13. This study was sponsored by the Office of Technology Assessment, whose contract officer Gough was apparently unable to find any US experts with knowledge of cancer in the US, and so selected British lifestyle advocates for the project. (Gough is also subsequently on record in a book on Agent Orange as dismissing evidence on the hazards of dioxin, including rejecting evidence of its carcinogenicity based on extensive animal data. Gough recently left OTA for a position in a chemical industry consulting firm.) Apparently responsive to criticisms of a draft report, The Office of Technology Assessment decided against its publication, which instead was independently published.
 14. Even if only 4 per cent of cancers in the general population are occupational in origin, this implies that occupation is responsible for some 20 per cent of all cancers in exposed workers.

15. The 2,4,5-T component of Agent Orange was contaminated with high concentrations of 2,3,7,8-tetrachlorodioxin which, according to the Carcinogen Assessment Group of EPA, is the most potent carcinogen it has ever evaluated, being some 7-fold orders of magnitude more carcinogenic than the potent carcinogen vinyl chloride.
16. Ames fails to extend his logic by claiming that faeces are carcinogenic, although they are a rich source of bacterial mutagen. Moreover, assuming that Ames' exclusionary emphasis on dietary carcinogens has scientific validity, the critical issue is not what carcinogens are "natural" and what are industrial (asbestos is an example of a carcinogen belonging to both categories), but what exposures are preventable or at least reducible.
17. Liberal organisations and progressive labour groups, through effective research, writing, direct mail and public advertising, are now challenging the ability of business to formulate the national agenda and shape the debate on basic social issues, such as worker rights, taxation and environmental concerns, and on foreign policy. Such organisations include the Centre for National Policy, Citizens for Tax Justice, The Democracy Project headed by Mark Green, The Economic Policy Institute headed by Jeff Faux, and the Council for Economic Priorities.

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