WHY DREAD WHAT IS PREVENTABLE?

Yana Mintoff Bland

Do not go gentle into that good night.
Old age should burn and rave at close of day:  
Rage, rage against the dying of the light.

*Dylan Thomas* (1946)

Cancer cases and deaths in the Maltese Islands have been rising while most other killers, such as heart disease or diabetes, have been declining.\(^1\) Whilst the overall cancer rate remains below most industrialised countries, the increase of breast and lung cancer, especially since the 1970’s, has been phenomenal. It is the purpose of this paper to examine possible causes and suggest preventive action.

Today, more than ever before, the price of health is vigilance, and this vigilance means that we must recognize not only the poisons in our environment but also the efforts on the part of industry to resist, in the name of profit, the removal of these carcinogens and mutagens, as well as government tolerance of these efforts (Glasser, 1979: 173)

There is no doubt that industry is responsible for a great deal of cancer. Many known carcinogens are the products or by-products of profitable, multi-national companies. The oil, chemical, petrochemical, asbestos and automobile industries; the pharmaceutical, agricultural and food industries are among a few of the giant cancer causers.

When the directors of these multi-national corporations control the funds of major investigation bodies such as the Memorial Sloan-Kettering Cancer Centre, the American Cancer Society, and the National Cancer Institute, then we have a case of the wolf “protecting” the sheep.\(^2\) Cancer management itself has become big business with a concentration of control, interlocking directorates, financial services, professional conformity, reciprocal favours and common interests. Many of us have an uneasy suspicion that the air, water and food we inhale and ingest are becoming increasingly unhealthy and that bombardment with so many industrial and military pollutants is inevitably leading to horrific breakdowns in our immune system. Few of us know, however, just how our fears can be turned into vigilance and our vigilance rewarded by reduced cancer suffering.

The conflict between health and profit has taken many forms throughout history. In the 1960s the climate was right in industrialized countries for health and safety consciousness to rise. The shortage of labour, the civil rights
movements, the growing environmental, anti-nuke and anti-chemical 
biological warfare movements 3 co-incided with a growing awareness that cancer 
constitutes not an individual but a social problem. It, more than any other 
disease, epitomises the callous disregard for public health currently displayed 
by military-industrial economies of the world. As a result of hard-hitting exposes of work-related cancers and community 
cancer hot-spots close to chemical and petrochemical industries or close to 
nuclear missile test sites and nuclear plants, some basic regulations were enacted 
evenually permiatate the household. US Department of Health, Education 
and Welfare statistics estimate that between 4 million and 8 million workers 
are particularly at risk as the invisible fibres attach themselves to clothing and 
are in danger but also anyone who has lived near asbestos. Family members 
are in danger but also anyone who has lived near asbestos. Family members 

Asbestos

By the beginning of this century asbestos had become a big industry. Mined 
mainly in Quebec, Canada by Johns-Manville Corporation, asbestos rock is 
manufactured into over a thousand different products including water tanks, 
ironing board pads and stove linings. It has been used widely in piping, 
insulation and brakes because of its resistance to heat and fire. But asbestos 
insulation and brakes because of its resistance to heat and fire. But asbestos 
 poses many of the environmental and virtually 
is also a most dangerous pollutant. Its microscopic fibres are virtually 
indestructible. People who work or live in the vicinity of asbestos inhale or 
ingest these small, tough fibres which are then trapped by the membranes or 
the lining of the lungs or by the stomach or colon. Scarring of the lungs takes 
place and after some years scar tissue replaces healthy tissue. This condition 
exists when small fibres which are then trapped by the membranes or 
inhalation and breaks because of its resistance to heat and fire. But asbestos 
insulation and brakes because of its resistance to heat and fire. But asbestos 

by military-industrial economies of the world.

ASBESTOS
Although asbestos manufacturers, the medical profession and life insurance companies were well aware of the hazards of asbestos by the 1920s, safety rules were resisted by the giant manufacturers and neglected by the government. The industry denied access to worker's medical records and aggressively dismissed the asbestos-cancer link. Not until Dr Irving Selikoff and his co-workers went directly to the unions involved was the full extent of the disaster revealed. For instance, they studied the health of the 632 men who had been in a New York pipefitters union in 1943. By 1977, Selikoff reported,

"instead of the 330 anticipated deaths there were 478 deaths.
Why did some 150 people die who were not expected to die? Well, there should have been 56 deaths from cancer, and there were 210. Instead of 13 deaths from lung cancer there were 93. One out of every three asbestos workers dies of lung cancer. This is simply a disaster!... Interestingly, too, instead of 15 deaths from cancer of the esophagus, colon, stomach and rectum there were 43... Obviously anyone who inhales dust also tends to ingest it.” (Selikoff, 1978)

In the U.S., there is now awareness of the asbestos peril. Asbestos workers have filed over $2 billion in lawsuits against manufacturers. Regulations have tightened. In a massive cleaning up programme, asbestos has been removed from most public places. The asbestos industry has not, however, reduced output. It has simply moved its factories abroad, and increased sales to places such as Malta where very few people know that asbestos fibres break up into a multitude of smaller lethal fibrils; where regulations are lax (an exception being the Malta Drydocks); where mesothelioma is not diagnosed at death; and where health laboratories are underequipped.

The practise of dumping hazards on more innocent populations has not been restricted to asbestos companies like Johns-Mansville or Raybestos. As the link between pesticides and cancer, smoking and cancer, or radiation and cancer have been exposed in the industrial countries, and as regulations have increased, so the runaway movement has gathered momentum. Carcinogenic pesticides are re-labelled and sold abroad; contaminated food is re-packed for export; hard-sell campaigns are focused on countries with rising real income but less experienced consumers; “dirty” factories are moved to new regions and countries without strict regulations. It is incumbent on governments of small and developing countries to understand and exercise their responsibilities in the wake of this onslaught of runaway companies; and it is a first priority that government agencies increase vigilance. The disturbing evidence that cancer has increased tremendously in Malta during the past twenty years is a clear indication that reaction is belated and much is amiss.

The profits of many companies have been and are being achieved at grave human cost. Even where regulations have been legislated, they are seldom enforced.
One in every four American workers (approximately 21 million) currently may be exposed on either a full or part time basis to OSHA-regulated hazardous substances. Upwards of 40 to 50 million persons or 23% of the general population of the United States may have had exposure to one or more OSHA-regulated carcinogens or hazardous substances during their lifetimes. (Senate Committee 1977)

The grave estimates of both the human and socio-economic costs of occupational exposure to carcinogens led to the 1979 Guidelines in USA, but when jobs are scarce and deregulation in vogue, such human suffering and social scandals are sacrificed at the altar of the almighty dollar. For instance in 1991, the Occupational Safety and Health Administration, OSHA, will inspect fewer than 0.5% of jobsites in Georgia: a 1-in-200 chance of scrutiny. When deaths on construction sites are being ignored and tacitly condoned, deaths after twenty years (which is the average latent period for lung cancer) are even more easily disregarded.

The latest British longitudinal study of the relationship between cancer and social factors confirms that mortality from lung, stomach and cervical cancer is higher in the working class. "Lung cancer shows the largest class differential in males but in women the largest class differences are for cancer of the stomach and the cervix". Specific site studies of naval shipyard workers 1958–77 by Najaran and Cotton show a two-fold mortality rate increase from all cancers and an astounding five and a half-fold increase from leukemia. They posit multi-factor causation: in particular exposure to asbestos, welding fumes and nuclear radiation. A retrospective occupation cohort study of Finnish shipyard and machine-shop workers from 1945 to 1960 shows "an increased risk of lung cancer among the shipyard workers. The most probable explanation for this finding is exposure to asbestos". The excess was most prominent for pipefitters, who were especially exposed to asbestos fibres. Autopsies of the lungs of men who had been exposed to asbestos dust at the Royal Naval Drydocks of Devonport, Plymouth showed a correlation between occupational asbestos dust exposure and severity of lung pathology. It is now scientifically accepted that all shipyard trades carry the risk of mesothelioma, lung cancer and pleural fibrosis caused by severe exposure to asbestos and other fibres. Some studies also show a thirty to forty per cent higher rate of lung cancer amongst welders exposed to stainless steel fumes, since chrome and nickel are cancer-causing agents.

As Table 1 illustrates, many other substances have been shown to induce lung cancer in humans: acrylonitrile used in the production of artificial fibres; fertilizers; pesticides; herbicides and related compounds; solvents and dyes. Besides shipyard workers, many other occupations have been shown to be at a higher risk of dying from lung cancer. These include: cement and chemical workers; stone, clay, pottery and glass workers; foundry moulders and coremakers; fettlers and metal dressers; metal plate workers and riveters; plumbers and lead burners; bricklayers and tile setters; coal tar and pitch workers; textile workers; plasterers, charmen, window cleaners, chimney sweeps; and radiologists. Radiologists are more likely to develop lung, breast cancer and leukemia. Radiation is also teratogenic, harming the focus, as well as reproductive organs. It merits a fuller discussion forthwith.
<table>
<thead>
<tr>
<th>Agent</th>
<th>Primary sites affected</th>
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<tbody>
<tr>
<td>asbestos</td>
<td>lung, GI tract, larynx, ovary</td>
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<tr>
<td>cadmium</td>
<td>lung, prostate</td>
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<tr>
<td>cement</td>
<td>lung: stomach</td>
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<tr>
<td>chromium</td>
<td>lung</td>
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<td>nickel</td>
<td>lung</td>
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<td>arsenic compounds</td>
<td>lung</td>
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<td>beryllium</td>
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<tr>
<td>bischloromethyl ether</td>
<td>lung</td>
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<td>mustard gas</td>
<td>lung</td>
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<tr>
<td>iron oxide</td>
<td>lung</td>
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<tr>
<td>petroleum &amp; oil mists</td>
<td>lung, skin</td>
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<tr>
<td>coal tar fumes</td>
<td>lung, bladder</td>
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<tr>
<td>tobacco</td>
<td>lung, stomach, colon, bladder prostate</td>
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<tr>
<td>acrylonitrile</td>
<td>lung, GI tract, liver, stomach</td>
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<tr>
<td>petrochemicals</td>
<td>lung, nasal</td>
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<tr>
<td>silica</td>
<td>lung</td>
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<tr>
<td>wood</td>
<td>lung</td>
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<tr>
<td>aluminium</td>
<td>lung</td>
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<tr>
<td>Halogenated Hydrocarbons</td>
<td>lung, foetus</td>
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<tr>
<td>Pesticides</td>
<td>sarcoma, non-Hodgkins lymphoma, lung, liver, foetus</td>
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<tr>
<td>Aldrin</td>
<td>lung</td>
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<tr>
<td>Dieldrin</td>
<td>lung, liver, foetus</td>
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<tr>
<td>Chlordane heptachlor</td>
<td>– ditto –</td>
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<tr>
<td>Malathion</td>
<td>lung, liver</td>
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<td>Parathion</td>
<td>leukemia, reproductive hazards</td>
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<td>Dinoseb</td>
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<tr>
<td>Dioxins: TCDD, 2, 4, 5 – T</td>
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<tr>
<td>Dibenzo furans</td>
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<tr>
<td>Carbon tetrachloride (CTC)</td>
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<tr>
<td>Ethylene oxide</td>
<td></td>
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<tr>
<td>Unsaturated Halogenated Hydrocarbons</td>
<td></td>
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<tr>
<td>Vinyl Chloride Monomer</td>
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<tr>
<td>PCBs</td>
<td></td>
</tr>
<tr>
<td>Alar apple growth stimulant</td>
<td></td>
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<tr>
<td>DES animal growth stimulant</td>
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<tr>
<td>Depo Provera</td>
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<tr>
<td>HRT chloroform in water</td>
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<tr>
<td>nitrosamines in food &amp; water</td>
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<tr>
<td>nitrite in food</td>
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<tr>
<td>benzene exhaust fumes, gas stations</td>
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<tr>
<td>aromatic amines e.g.</td>
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<td>beta-naphthylamine</td>
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<tr>
<td>benzidine dye</td>
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<tr>
<td>mineral oil</td>
<td></td>
</tr>
<tr>
<td>Aldactone &amp; Flagyl (drugs for high blood infections)</td>
<td>bladder, skin, scrotum, cervix</td>
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The evidence linking smoking to lung cancer has been widely accepted. Cigarette smoke contains a wide variety of mutagenic chemicals which irritate the lungs, become absorbed into the blood stream, circulate through distant organs, and concentrate in the urine of smokers. However, there are good grounds for concluding that the relationship between smoking alone and lung cancer is being overestimated. Many studies show that there “may be synergistic or multiplicative interactions between smoking and certain types of occupational exposure – especially asbestos – in producing increased risk of lung cancer”. (Epstein 1979: 152) In congested urban areas, the combination of vehicle exhaust fumes and industrial pollution enshroud cities in deathly haloes that cannot be disregarded in deference to recent propaganda that cancer is just an individual smoking problem.

Recent trends in U.S. site-specific cancers have brought the ‘smoking causes lung cancer’ mentality into question because bladder cancer, closely associated with smoking, has decreased while lung cancer has not. (Davis 1988: 633) Whilst individual smoking habits no doubt exacerbate lung cancer risk, individual attempts to quit smoking are undermined by the tobacco companies hard-sell techniques and by the increasing stresses of living in an economy-imposed rat-race. There is overwhelming evidence of societal, rather than individual, cause for the current epidemic of cancer. It is an ineluctable fact that chemical and nuclear pollution of our air, water, food and seas are the major cause of cancer.

What is produced, how it is produced and how it is consumed primarily determine the increasing trend in this terrible disease. However, conservative oncologists choose to ignore this evidence, while most cancer control experts argue only for more cancer detection and treatment. Neither will address the destructive and rapacious modes of production in today’s burgeoning military-industrial economies, or admit that the only effective cure for cancer is prevention!

“The very obvious and dramatic class differences in cancer mortality”17 and the specific occupational links to cancer are officially recognised in most industrialised countries. In Malta too, my research has shown that unskilled and skilled manual workers are much more likely to die from cancer at any age than professional and managerial workers. It is among the urbanised working classes that multiple causation conspires, and victims of cancer increase. My previous research on the location incidence of lung cancer supports this hypothesis.18

BREAST CANCER

Who sees variety and not the Unity wanders on from death to death.

Brihad-aranyaka Upanished

Breast cancer does not kill as many women as lung cancer kills men, but now Malta has the highest recorded female breast cancer mortality rate in the world! At 35 per 100,000 per year it is, for instance, double the breast cancer death
rate in Greece. Its rising incidence in the Maltese Islands and in many other countries, such as the Caribbean, South America and Eastern Europe, has been dramatic. Whilst the rate is much lower in USA, the number of women affected is not. A Breast Cancer Coalition of members concerned with the increasing incidence of breast cancer have collected 175,000 letters, one for each new diagnosis in 1991, addressed to the U.S. President and members of Congress. The letter begins, “Breast cancer is killing American women at an alarming rate – one every 12 minutes. Every three minutes another woman is diagnosed with this disease.”

A severe drawback to informed analysis is the fact that occupational and environmental data is even less available for women than it is for men. And in the case of breast cancer, its very location suggests a hormonal as well as industrial determinant. The latest U.S. National Cancer Statistics Review puzzles over the long-term continuing increase in cancers of the breast and prostate. Brenda Edwards, associate director of the cancer surveillance programme noted that “60 per cent of the women diagnosed with breast cancer now have no recognized risk factor such as a family history of the disease”. (NCI 1991) The list of known risk factors reflects the establishment’s bias toward individual characteristics, omitting all reference to synthetic hormones, carcinogenic chemicals and irradiation.

Were all the recognized risk factors just statistical artifacts? For instance: family history of cancer: reproductive history including early menstruation, no children, first born child born after 35, late menopause: race and ethnicity; high fat and meat diet. These factors were found to be highly correlated to the number of breast cancer victims. But were researchers unable to see the forest for the trees? Is there an increasingly hostile environment for women’s health and biological harmony? Against a pervasive carcinogenic backcloth, any one of these “risk” variables may trigger off a hormonal imbalance. “Breast cancer is a multifactoral disease,” said Dr Dao to Rose Kushner (Kushner 1975: 107), “There just is no one single cause that works”. Rose elicited this comment from the Chief of the Endocrine Laboratory in New York, after much probing.

Dr Dao stated: “Anything that upsets the body’s hormonal balance contributes to a favourable environment for cancer growth in the breast”. For instance, stress: “Plenty of hormones are secreted during stressful time: One hormone could stimulate another. A stress hormone that stimulated estrogen secretion could help to create the nourishing endocrine environment the cancer needs”. 

Most oncologists would agree that stress, whether individual or systemic, is a significant contributive factor. Inability to cope with the deep contradictions and fast changes of our times has an effect on our health and our resistance to disease. Whether this is seen as individual breakdown, general maladaptation, class alienation or women’s oppression, it is scientifically referred to as the residual factor in cancer causation. Clearly, mind and body are inextricably related.
Stress may have particular relevance to female breast cancer. In the attempt to break free of their historical repression, women are caught between twin destinies: the ancient destiny to multiply and make the earth more fruitful; and the modern destiny to limit the number of her offspring, curtail or avoid breastfeeding and, when possible, enter the workforce. A traditional “cottage” spinner or weaver suffered greater economic hardships and higher mortality rates, especially among the young, but she was not torn from her home by the need to earn money; nor was she isolated within it to bear and rear her children.

The dramatic change in women's reproductive and productive roles is nowhere more abrupt than in the last three generations of women on the Maltese Islands. The stresses of such a sharp transition were exacerbated by socioeconomic changes which led to unhealthy habits and brought exposure to widespread chemical carcinogens and high irradiation levels.

There is also a recent and growing danger of excessive endogenous and exogenous hormones. What you eat affects, among other things, your hormonal balance. Frequent consumption of animal fats and meat leads to higher estrogen levels and higher cancer rates. “Several researchers have pointed out that most of the meat we eat comes from female animals—hens and ewes, which are loaded with natural estrogens, or from castrated meals-steers and capons—whose androgen-producing testicles have been removed.” (Kushner 1975: 108) Most animals are also reared under very stressful conditions and slaughtered in mass panic, leading to greater hormonal imbalance.

In addition, many animals are fed or injected with growth stimulants—exogenous estrogens—like diethylstilbestrol (DES). Since the 1940s hormones like DES have been widely used as a fattener and food additive for beef cattle and sheep and the 1979 US regulations are far from sufficient.

Many women have unwittingly been given prescriptions for one estrogen or another. The synthetic chemical substitute DES is among the hormones that have been liberally prescribed as oral contraceptives and morning-after pills; in estrogen-replacement therapy for menopause and miscarriage; for menstrual cramps and irregularities; and for general itching, acne and hisutism. Other hormonal drugs such as estrone and estradiol prolactin have also been shown to stimulate breast cancer. Much hormone replacement treatment at menopause has been associated with the development of breast cancer in later life. Some of these drugs, such as DES, also have the ability to cross the placenta, reach the foetus and then cause serious disease (e.g. vaginal cancer) twenty to thirty years later.

“Here's that which is too weak to be a sinner
Honest water which ne'er left man i' the mire.”

(Shakespeare Timon of Athens 1607–8 Sc.2 Line 60 and inscribed on the drinking fountain in the market square of Stratford-on-Avon).
Most drinking water is full of carcinogens: chlorine, reacting with organic material in water, produces hundreds of chemical by-products; some of which—like chloroform, DCA and TCA—are potent carcinogens. In summer, when more chlorine is added to water supplies, trihalomethane levels jump far above suggested health limits. Nitrate, which finds its way into water from sewage and agricultural runoff, also transforms into compounds which become potent carcinogens such as nitrosamines. Irresponsible handling and disposal of toxic waste, together with the contemporary pesticide-mania, lead to dangerous leakages into ground water and contamination of sea water.28

Tracking all these contaminants is difficult and costly, but absolutely necessary. Water is life itself. We owe it our children to discover how many carcinogens are in that feeding bottle or glass of water. Yet with all the giant steps in missile technology and outer-planet research, the techniques for testing water are still archaic. "If you don't know what (chemicals) you're looking for, it's difficult to find out what's in water," says Washington State University's Richard Bull, a leading drinking-water authority. In addition, officials have looked at the risks from each known contaminant individually, when it is known that cancer risks multiply when carcinogens are added together. Chemicals are much more risky when mixed together, concludes Daniel Okun, professor emeritus of environmental engineering at the University of North Carolina.29

"Food is the single most important route of exposure for humans to synthetic chemicals. In a year the average American eats about 1500 pounds of food containing nine pounds of chemical additives (other than sugar and salt)." (Epstein 1979: 179)

Many food additives have been shown to be carcinogenic. Whilst some do not have a proved direct link to breast cancer, food contamination is definitely a contributory factor. The slow upward trend in stomach cancer in the Maltese Islands, counter to the prevailing downward trend in most industrialized countries, is of significance here.

Direct food additives were once natural plant extracts; but these have been ousted by synthetic dyes based on coal tars. Many coal-tar derivatives are known carcinogens, for example, 2-naphthylamine and benzidine cause bladder cancer in occupationally exposed workers.30 The red colouring agent, Red 2 or amaranth, used widely by the food industry, is also carcinogenic. But many food dyes have not been adequately tested. The long controversy over whether or not saccharin is a carcinogen highlights the inadequacy of many industrial and epidemiological studies.

Indirect food additives include the residue of pesticides and herbicides on vegetables and cattle-feed. Perhaps best known are the carcinogenic and mutative hazards of 2, 4, 5-t and the impurity, dioxin, that is produced in its manufacture.31 The human tragedy following explosions at manufacturing plants (Seveso, Italy in 1976 and Coalite, USA in 1968), the flagrant spraying
of Agent Orange herbicide (made of equal quantities of 2, 4, 5-T and 2, 4-D) by the American Troops in Vietnam, and more recently the explosion of Union Carbide's chemical pesticide plant at Bhopal, India (killing 1,700 people in only a few hours and injuring hundreds of thousands of residents) revealed the horrific dangers of these toxic chemicals to the world. A recent retrospective cohort study by Marilyn Fingerhut at the National Institute for Occupational Safety and Health, found that chemical workers exposed to dioxin (TCDD or 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin) for longer than a year with more than twenty years latency, have a cancer mortality rate 46% higher than the general population. In the USA, prime sources of environmental TCDD have been traced to the use of leaded gasolines, municipal and hazardous waste incinerators and chlorine bleaching of pulp in the paper industry. \(^{32}\) (See Chart A below on the known risks of this pervasive contaminant).

**CHART A**

<table>
<thead>
<tr>
<th><strong>TCDD has several toxic effects</strong></th>
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<tbody>
<tr>
<td>Death</td>
</tr>
<tr>
<td>Wasting syndrome</td>
</tr>
<tr>
<td>Thymic atrophy</td>
</tr>
<tr>
<td>Splenic atrophy</td>
</tr>
<tr>
<td>Testicular atrophy</td>
</tr>
<tr>
<td>Liver enlargement, fatty deposits, necrosis</td>
</tr>
<tr>
<td>Hyperplasia: gastric mucosa, urinary tract, bile duct</td>
</tr>
<tr>
<td>Squamous metaplasia: melbomian glands, ceruminous glands</td>
</tr>
<tr>
<td>Chloracne: hyperplasia, hyperkeratosis, altered pigmentation</td>
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<tr>
<td>Teratogenesis</td>
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<tr>
<td>Carcinogenesis</td>
</tr>
<tr>
<td>Immunosuppression</td>
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<tr>
<td>Enzyme Induction</td>
</tr>
<tr>
<td>Biochemical effects</td>
</tr>
</tbody>
</table>

Source: Environmental Protection Agency, U.S.A.

Little known is the fact that:

"the lipid solubility of pesticide residues and halogenated biphenyls leads to their selective concentration in breast milk...Their chemical stability and physical properties lead to their persistence in the environment." (Raffle P.A.B. 1987: 962)\(^ {33}\)

However in Malta, toxic pesticides, such as Malathion, and Vegadex weedkiller, are imported in greater and greater quantities and used widely, with little protection and no afterthought. Controls are few and outdated and spraying is generally done with great abandon. The sprayers, the sprayed, the environment, and those who consume the sprayed food are all contaminated.
The growing pollution of the air, water, food and sea by carcinogens multiplies the risk of cancer. Regulations are all too few and carcinogens are all too many. They include many pesticides, benzene, certain hydro-carbons produced by the chemical processing of petroleum, vehicle exhaust fumes, sulphur dioxide emissions from conventional power stations and – last but not least – ionizing radiation from X-rays, nuclear power stations, nuclear weapon-testing and nuclear leakages.

The health hazards of nuclear radiation have been curiously overlooked both by those fighting for nuclear free zones, who focus on fear of the ultimate explosion, and by those calling for cancer prevention programmes, who focus on cancer screening or anti-cancer diets. Each ignores the invisible fallout that is bombarding us every day to the proliferation of nuclear equipment. Yet scientists know more about the cancerous effects of irradiation than that of chemicals.

Indeed, results accumulating from the atomic blasts at Hiroshima and Nagasaki, and from patients treated by X-ray therapy, strongly indicate that ionizing radiations can cause cancer in nearly all organs of the body, and that some effect is produced even by a low dose rate. The Hiroshima and Nagasaki A-bombs led to an epidemic of leukemia and thyroid cancer. Atomic fall-out also led to higher rates of breast and lung cancer, especially after 25 years. Recent research by Dr Yoshimoto et al, taking a 1950–1984 timespan, suggests a higher susceptibility to radiation-induced cancers in prenatally exposed survivors than in exposed adults. This augurs badly for those still in the womb at the time of the Chernobyl nuclear disaster.

The open-air atomic weapons testing carried out by the U.S. and other countries in the 1950s and early 1960s led to hazards that few people realized. In Southern Utah, 1979 reports show that two and a half more children died of leukemia there than elsewhere in USA and that other products of irradiation such as cataracts, thyroid disease and birth defects are relatively high.

Our exposure to radiation has increased most insidiously as nuclear missiles, nuclear power stations, nuclear transport, and nuclear waste recycling have become bigger and bigger business. In addition military secrecy concerning numerous accidents to nuclear submarines and ships carrying nuclear weapons, and the ever-increasing risk of such accidents – especially in the Mediterranean – make genocide a highly logical outcome. Denuclearization of sea, land, and space is vital for the future of human life on earth.

The geographic distance over which radiation leaks are dangerous, and their long-term effects, are inestimable. Recent research links Chernobyl to a rise in US death rates and shows that vulnerable groups – newborn babies and the elderly – also suffered higher death rates in 1954, 1955 and 1957 (peak years for atmospheric nuclear testing) as well as in 1980, the year of the Three Mile Island nuclear accident. The atmospheric testing of the mid-fifties also damaged the immune systems of babies, making the 25–34 age group more vulnerable.
to Chernobyl, according to Dr Gould and Dr Sternglass. Female breast cancer in Malta shows a tri-modal age incidence rate from 1970–80, suggesting that "three ancillary experiences should be taken into account in interpreting this data. The particularly high number of cases in the 70–74 age group indicates that these women may have been particularly vulnerable about twenty-five years earlier in the 1945–55 period." (Mintoff 1990: 49). This period is when irradiation was at its first high point, with the 1946 US A-bombs on Japan and the above mentioned atmospheric testing of the mid-fifties. In addition, upwind to the north of Malta, France and Italy were increasing their nuclear power plants and nuclear arsenals. Israel, to the East, was doing likewise.

That irradiation was an important trigger to both breast and lung cancers, could be corroborated by the fact that the 1960's saw a large increase in Malta's skin cancer rates, and the past thirty years saw a general increase in skin cancer in the Mediterranean.

Of significance too is the yet unexplained rise in the incidence of birth defects. The acute short term effects of irradiation include sickness, nausea, headaches and balding; the long term chronic effects include leukemia, cataracts and cancers. But there are also important developmental (harming the pregnant woman on her progeny) and genetic (affecting reproduction) hazards of fallout. Children born to exposed women have a higher risk of mental retardation, nervous-system disorders, bone malformations, leukemia and other cancers. A tragic case in point are the "jelly babies" born in the Pacific Islands, where French atomic bomb testing was rife. The extreme vulnerability of the foetus to radioactivity in the first trimester of pregnancy is now a scientific fact. Even the smallest radiation dose will produce mutations in chromosomes of gonadal cells that become sex cells. A simple example is a sex cell with 47 (instead of 46) chromosomes, causing Downs Syndrome in offspring. Add to this the increasing exposure to developmental and mutagenic toxins, and we realise that our children are in great danger.

Interpretation of the 150% increase in Malta's breast cancer death rates from 1960–80 and the subsequent 33% rise in just eight years, 1980–88, includes the multiplicative effects of increasing exposure to irradiation and carcinogenic chemicals; widespread prescriptions for hormonal treatment; increased animal fat, meat and sugar in diets; and stress due to dramatic changes in women's reproductive and productive roles.

SUMMARY

The recent history of many carcinogens is a saga of official neglect, in complicity with industrial and commercial interests. Inherent limitations to cancer epidemiology do exist: for instance, long latent period and synergistic effects of cancer agents. But these limitations afford no excuse for the continuing subordination of public health to self-serving, short-sighted industrial, military
and political interests. Such interest groups are in the business of preventing prevention. The tactics they use include: minimizing the risks; diversionary moves: propagandizing the public; blaming the victim; controlling information; controlling public policy; exhausting the regulatory agencies; and flight to countries and regions more receptive to “dirty” industries. Economists are employed to argue that benefits exceed the costs of continuing production. Lobbying, including daily conferences with congressmen and other politicians, is a way of life in industrial nations. As the cancer of corruption spreads through inhumane and uncontrolled military-industrial-political circles, so the proliferation of carcinogens increases throughout the world.

As a minimum, the following steps are urgently required on a local level:
(a) Government increased responsibility for healthy economic development and increased vigilance against carcinogens and toxic chemicals, formation of an Environmental Protection Agency, regulation of all industrial and environmental poisons and carcinogens, mass education;
(b) Legislation to have health and safety committees with executive powers on all worksites;
(c) Improvement of women’s work conditions: increase in women’s freedom and ability to be productive members of society; increase in women’s knowledge and control of reproductive practices;
(d) Limitation of the number of hormonal prescriptions and X-rays to the bare minimum necessary;
(e) Mandatory tests for radioactive contamination of food, sea, water, air, e.g. imported grains;
(f) Mandatory tests for carcinogenic substances: ban or limits on use, exploration of alternatives. Ban on the use of all asbestos and removal from all public places: school-to-school health surveys to test air and water for carcinogens and lead levels;
(g) Strict control of the disposal of toxic wastes;
(h) Strict control of the use of pesticides – introduction of permaculture farming techniques.

Coupled with the conservation of energy and the advocacy of denuclearization of the sea, air, water, and space through Mediterranean and international associations, the above eight-point plan is a priority. It could be the best present we ever gave our children.

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Notes

1. Mintoff Y (1990) Cancer in Malta Economic and Social Studies, Journal of the Faculty of Management Studies, University of Malta 5: 38 – 63. A primary data source are Malta Department of Health Statisticians. Also see the Demographic Reviews of the Maltese Islands.

2. Moss R W (1980 The Cancer Syndrome Grove Press NY. Especially Chapter 14 Preventing Prevention, and Chapter 16 The Cancer Establishment. Dr Helen Caldicott warns that “with each launch of the (space shuttle) one quarter of 1% of the ozone layer is destroyed. So far the agency shuttle has destroyed 10% of the available ozone”. The agency charged with the worldwide monitoring of the ozone levels is NASA, which is responsible for the shuttle launches. Yet another case of the goat “guarding” the cabbage patch!


4. For instance the British 1974 Health and Safety Act and the US 1979 Guidelines for the General Regulation of Carcinogens. This latter scheme established three fundamental principles: (a) animal carcinogens must be recognised as human carcinogens; (b) it is impossible to define a “safe” level of exposure to carcinogens; (c) all carcinogens need to be treated in the same way, with standard regulations limiting exposure to the “lowest feasible level.” The European Community Council Directive 80/1107/EEC short-term measures were that: (a) workers and/or their representatives at the place of work receive appropriate information about asbestos, arsenic, cadmium, lead and mercury, (b) there is appropriate health supervision of workers during the period of exposure to asbestos and lead.


7. Brodeur P. (1985) pp. 324, 336, 339, 345. Also calculates that property damage claims against Johns-Manville totalled $50 billion in 1985 while the company was in bankruptcy proceedings.

8. Dramatic examples include: the hazardous waste leakages at Times Beach, Mo, USA (1983) which necessitated evacuation and federal government purchases of the entire town; the Love Canal, NY, (1980) toxic chemical exposures which necessitated evacuation of the community; the California train accident of 1991, in which thousands of gallons of insecticide poured into the Sacramento River, destroying all marine life for many miles.


Selikoff I. Profs (1979) Asbestos Disease in US Shipyards Mount Sinai Medical Centre NY.
18. High risk communication for lung cancer from 1970 to 1988 were the three dock inner cities of Senglea, Cospicua and Vittoriosa, the quarry areas of Qrendi and Mqabbba and other towns in the industrialized inner harbour region. And: “Over the 1970 – 80 period, 44% of all female breast cancer patients lived in the highly urbanised Inner Harbour Region whilst less than 38% of the total female Maltese population lived there.” Mintoff Y. (1990) p. 51 and Tables 7 – 11 pp. 59, 60. High rates of most cancers have been related to proximity to toxic chemical waste disposal in many geographic studies including that of Najem et al (1985) Clusters of cancer mortality in New Jersey Municipalities Int J Epid 14: 528 – 537.
Important geographic studies include:
Mintoff Y. (1990) Cancer in Malta The rise in breast cancer incidence and mortality rates in the 1970s is clearly shown in Figure 6, p. 47.
Investigations suggest two main groups of factors are related to an increased risk of cancer: the loss or lack of closeness or attachment to an important relation in early life; and the inability to express hostile feelings or more generally the abnormal release of emotion. Growing evidence points to the link-role of the immune system between the central nervous system and cancer. For a discussion of the negative image given of cancer patients Sontag S. (178) Images of Illness NY Review of Books 9.2.78 pp. 22 – 29. And for a victim’s tale of battle with this image and the


29. Quoted by Carpenter B. above.


Curtis F. (1987) *Review of the Colouring Matter in Food Regulations* London Food Commission. He summarises: “58 different colours can legally be used in food (in UK). Six of these are not permitted in other EEC countries. Amaranth, caramel, sunset yellow and brown HT are among the most suspect additives. Amaranth is banned in the USA, USSR, Austria, Greece, Norway and Malaysia. But it is used in large quantities in Britain to imitate the colour of blackcurrant in ice-cream and sweets. It causes mutations and possible birth defects and cancer in animals”.


The Selected Cancers Cooperative Study Group (1990) *The Association of Selected Cancers with Service in the U.S. Military in Vietnam* Centers For Disease Control Atlanta, Georgia, USA. This is one of many studies that shows a higher risk of cancer after exposure to herbicides during the Vietnam war.


Gall R.P. Hauser T. (1988) Chernobyl 1 – The Final Warning Hamish Hamilton London This is a logical but passionate appeal for global cooperation to prevent further radiation calamities whether from power plants or weaponry.

Stillbirths and miscarriages in the region of the 1986 Chernobyl disaster have risen 250%, while cancers were already recorded to have risen by 46% on this very day of writing (17 – 9 – 91) USA Today: 6A. “8,000 adults and 13,000 children face early death”.


The Defense Monitor (1991) notes that “thoroid and bone cancers downwind of the Nevada Test Site are 8 and 12 times, respectively, higher than the national average.” July 12, 1991.


The Defense Monitor (1991) “There have been 1,900 nuclear explosions worldwide since Hiroshima and Nagasaki or one explosion every nine days.” July 12, 1991.


See also: Greenpeace Mediterranean Research Documents and Friends of the Earth exposure of design faults in Britain’s advanced gas-cooled reactors so that up to 80 tons of “mildly radioactive carbon dioxide gas escapes several times a year from nuclear power stations in Kent, Hartlepool, Cleveland, Heysham and Lancashire”. Reported in The Guardian Weekly May 15, 1988 p. 6. They also found evidence of radioactivity in London’s drinking water in 1990.


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