triumphantly completed. At every session could be seen Mr J A (Gussie) Michigan, making sure that everything ran smoothly—as chairman of the scientific committee, he and the honorary secretary, Dr J P Alvey, earned warm praise for an imaginative and varied programme. Mrs Stanley McCollum and Mrs Edward Tempy were equally successful with the ladies’ and children’s programmes—while the profusion of flowers at every occasion, unwiting despite the unprecedented heat wave, added a touch of elegance and femininity that was much appreciated. The varied social occasions gave the three national contingents ample opportunity to mix (see p 160) while not weighing them down with ceremony.

Departure from Ireland is always sad. On this occasion the Emerald Isle was baded a delicate shade of brown, but as usual it had worked its magic on the visitors. Truly, a memorable meeting.

Preventive nutrition

The recent consultative documents1 2 have highlighted the importance of preventive measures for maintaining health. Of these, one of the most important areas is nutrition. The recommendations of the Royal College of Physicians on the prevention of coronary heart disease3 and those of the DHSS on infant feeding4 have further emphasised the importance of understanding of nutrition and its practical application.

How many doctors have the knowledge, interest, or time to make recommendations based on current knowledge—defective5 as that may be? During training, medical students have very little of their time given to nutrition, and even less to ways of interpreting this knowledge and applying it to the practical aspects of patients’ diets. Yet, unless they understand nutrition, treatment may become meaningless and could even be dangerous. To some extent this gap has been recognised and dietitians have been employed to fill it—and it is worth recalling that the difference between a nutritionist and a dietician is that the latter is the expert in the interpretation and practical application of the scientific principles of nutrition in health and disease.

A recent report, Dietitians of the Future,5 has recommended that dietitians should act much more in a consultative way. At present, while some dietitians do work in this way, usually their expert knowledge is not being fully exploited. Until the recent reorganisation of the NHS, dietitians worked mainly within hospitals, where they concentrated particularly on therapeutic or modified diets, and only a handful were employed as community dietitians working through medical officers of health and based in health education departments.

Almost a year ago district dietitians were first appointed to integrate nutritional and dietetic policies for health districts and to advise district management teams on nutrition. Many health workers in contact with the public find that they have to give nutritional advice, and until policies are agreed this advice will be inconsistent and confusing. For the general practitioner—as well as for community medical staff, health visitors, and health education officers—the mass of dietary and nutritional advice issued and distributed from many sources may be thoroughly misleading. Co-ordination of sound policies and discussion with all concerned are of the utmost importance.

The needs of districts obviously vary, but, with their potential in preventive as well as therapeutic medicine, we should surely encourage the establishment of dietitians and their use in the Health Service. District dietitians should also have some clinical responsibilities and provide a service for the district general hospital and teaching hospitals with specialist posts in paediatric, renal, and metabolic units. A community dietetic post could act as the link for the preventive work.

At present 150 dietitians qualify each year (after a four-year training) and it will be difficult to increase this number until hospitals have their full establishment of dietitians and so can train students and give them the necessary practical experience. Meanwhile dietitians themselves could do two things. Firstly, they should ensure that they use their expert knowledge properly. Secondly, that they do not undertake tasks which are of little value (such as repeated advice to an obese patient) or which other staff could be doing.

4 DHSS, Health Services Development Baby Milks and Infant Feeding. HC(76)16.

Vinyl chloride: the carcinogenic risk

Many an artisan has looked to his craft as a means to support life and raise a family but all he has got from it is some deadly disease, with the result that he has departed this life cursing the craft to which he has applied himself.

RAMAZZINI

In identifying occupational hazards the time relation between cause and effect leads to the greatest difficulties. In many instances—for example, the association of  β-naphthylamine with bladder cancer or of asbestos with mesothelioma—the cause may precede the effect by as long as 20 to 30 years. More and more materials used in industry, at first thought to carry no health hazard, have recently come under suspicion as possible carcinogenic agents.

The latest chemical falling into the category of proved carcinogens is vinyl chloride monomer (VCM), a gas at normal pressure and temperature. In its liquefied form under pressure it readily polymerises into polyvinyl chloride (PVC), a white, solid, and in Britain some 2000 workers are concerned in its manufacture, 500 of whom are exposed to VCM vapour in the early production stage in autoclaves. The chemical process was discovered in Germany in the mid 1930s and has been in use for over 40 years in the United States and in Britain since the mid 1940s. At that time the fire and explosion risks of VCM were known, and its narcotic effects led to experimental trials of VCM gas as an anaesthetic, but they were discontinued because cardiac arrhythmias occurred.

In 1966 occupational acro-osteolysis was first recognised in VCM autoclave workers1 in Belgium. The triad of
Raynaud’s phenomenon, sclerodermatous skin changes, and osteolysis of the distal phalanges was confirmed in several investigations of autoclave workers in Canada and the USA, medical surveys showing an incidence of 3-5%, and suggesting that the disorder was largely confined to autoclave or reactor cleaners exposed to the VCM gas.\(^2\)\(^3\)

In 1974 an association was reported\(^1\) between exposure to VCM and a rare liver tumour—angiosarcoma—in men who had worked as autoclave cleaners in the first stage of the polymerisation process. Carcinogenic liver changes had been reported\(^4\) in 1971 in rats exposed to a dosage of 30 000 ppm vinyl chloride monomer, but that level of exposure was so high that its importance for man had been disregarded. Further testing, however, in 1973 by Maltoni\(^6\) in Italy confirmed that liver cancer occurred in animals at exposures as low as 250 ppm. Since 1974 there have been 48 reported cases of angiosarcoma associated directly with VCM, two of them in Britain.

When the results of the early studies and the plant data from the US were sent to HM Factory Inspectors and Employment Medical Advisors monitoring of the six British VCM plants began at once. A time-weighted threshold limit value of 50 ppm in the working environment was imposed. The Health and Safety Executive issued a comprehensive code of practice in February 1975 as a result of the formation of a joint working group of the Inspectorate, unions, and employers. In October 1975 a new hygiene standard was adopted: a ceiling level of 30 ppm; a time-weighted threshold limit value for VCM of 10 ppm; and a policy that, wherever practicable, exposure of workers should be brought as near as possible to zero concentrations. In all the history of occupational medicine there has never been a better example of a swift co-operative reaction to evidence that a hitherto unsuspected process carried carcinogenic risks. To evaluate the extent of the hazard within Britain three studies have been set up: a prospective study of PVC manufacturers; a prospective study of PVC fabricators (about 5 ppm of VCM is retained in the PVC and is available for release during subsequent processing); and a retrospective study of primary angiosarcoma. The present evidence points to a latent interval of from 12 to 29 years (mean around 20 years) with a mean duration of exposure of 18 years.

As yet we have no established screening procedure for the early detection of angiosarcoma.\(^7\) Nevertheless, a standard medical examination procedure has been formulated to try to identify early cases or susceptible workers, including estimation of liver transaminases, alkaline phosphatases, and bilirubin, a platelet count, and urine analysis. By arrangement with family doctors individuals with persistently abnormal liver tests are being referred to the appropriate consultant. Preliminary results in a recent study\(^7\) of 1357 workers showed no obvious liver disease due to VCM exposure. There has, however, been some difficulty in interpreting liver function tests, in dealing with false-positives, and in differentiating other pathological conditions such as alcoholism. The value of invasive techniques such as liver biopsy is also being questioned, and attention is being focused on grey-scale ultrasonography as a possible acceptable alternative. Emphasis has meanwhile shifted from biological testing to more stringent control of factory exposure, ensuring that conditions conform to the most recent threshold limit value of 10 ppm. It may well be that the angiosarcoma cases now presenting are the result of previous exposure to high concentrations of VCM, and some evidence\(^8\) suggests that polymerisation workers may have been exposed to concentrations as high as 1000 ppm VCM in the 1950s; 400-500 ppm in the 1960s; and 100-150 ppm in 1973 and 1974.

Surveys now in progress will confirm whether the new limits for exposure to this chemical carcinogen have eliminated any further health risk. This example of a hitherto unsuspected health hazard in a familiar material should act as a warning to all chemists and toxicologists and adds weight to the wise advice of Ramazzini,\(^9\) who in 1700 pleaded with his physician colleagues to inquire during the course of their medical examinations. ‘‘What trade do you follow?’’ Already our industries are trying much harder to achieve the new hygiene standards, to set up routine monitoring of the working environment, and to provide medical supervision of the work force.

---


---

Cancer of the oesophagus

About 2500 patients die each year in Britain from oesophageal cancer, the incidence being 50 per million. As a rough estimate from published reports,\(^1\) of 100 patients with the disease (mostly men over 60) 80 will present with dysphagia, but 20 will never have had any difficulty swallowing. Fifty have pain in the chest or upper abdomen. Regurgitation, hoarseness, or respiratory difficulty is rarer. On average before the patient seeks medical advice symptoms last five months, and the average loss of weight is about 10 kg. In hospital about 40 will have evidence of distant tumour spread, but 60 will appear to have operable growths and resection will prove possible in 50. The operative mortality lies between 10% and 20%, so that only 40 may expect to leave hospital having had their tumour resected. Twenty will die in the first year and only five will survive for five years.

Pessimists may well wonder from these statistics whether it is worth treating the disease at all: but treatment aims at both increasing the survival time (quantity of the remaining life) and relieving distressing symptoms (quality). This explains why radical radiotherapy is preferred for mid-oesophageal cancers, since the mortality is lower than with surgery and most patients will be given symptomatic relief for one year. Radiotherapy also gives good palliation, with or without the insertion of tubes to enable saliva and fluid nutrition to be swallowed. Results are poor in so many cases because the growths are so extensive. If the tumour can be removed the five-year survival is 10%, if the tumour is less than 4 cm long this increases to 20%, and if there are no local lymph nodes diseased the five-year survival is 40%. Early diagnosis is of utmost importance.

General pathological principles explain why symptoms occur so late. Circumferential tumours cause obstruction, but asymptomatic growth may easily occur in a hollow distensible organ. In the stomach, presentation of growths at the pylorus and cardia is early compared with those in the body. Similarly in the oesophageal lesions of the cardia and postcricoid region present earlier than those in the body, which either proliferate...