

to prevent and control hazards than medium-size and big companies. In addition their awareness of occupational health problems and safety is not always well developed, and they inevitably need expert support to control their occupational health and safety hazards and to start the development of healthier and safer workplaces. There are, however, several problems in organizing such support. In Finland, only occupational health care units can reach small workplaces

on such a scale that they can intervene in health, safety and productivity issues.

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Environmental and chemical toxins and psychiatric illness. By JS Brown Jr. Washington (DC) & London: American Psychiatric Publishing Inc, 2002:320 p. Price USD 45.00. ISBN 0-88048-954-5. [This book can be obtained from the following address: American Psychiatric Publishing Inc, 1400 K Street NW, Washington, DC 20005, USA]

Occupational exposure to neurotoxic chemicals and accidental chemical disasters are common. Thus far, only a dearth of literature is available on the psychiatric syndromes associated with toxic substances. This excellent book deals with environmental and chemical toxins and psychiatric illness, and it thoroughly covers current research information on this topic. At the moment, with the threat of chemical and biological attacks, this book is particularly timely.

The book consists of the following six parts: “Military, Terrorist, and Disaster Incidents”, “Pesticides”, “Metals”, “Solvents”, “Toxic gases” and “Other Chemicals and Syndromes”. It is well written with extensive references and recommendations for additional reading on all the subjects covered. The book has a clear structure. Each of the six parts has several chapters introducing chemical and radiation exposures and the epidemiology, diagnosis, and treatment of the exposure syndromes. The tables compile information on occupations and environments at increased risk for chemical or radiation exposure, as well as the signs and symptoms — both physical and psychiatric — associated with the exposures; they form useful checklists for the reader. The psychiatric diagnoses attributed to the exposures according to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR) of the American Psychiatric Association are also described in the tables.

The book not only concentrates on medical issues, but also describes the social and historical context of the matters discussed. It includes plenty of examples dealing with military and chemical disasters. Where suf-

ficient evidence-based information on the relationship between toxic substances and psychiatric syndromes is lacking, the author presents the currently existing different opinions and theories about these matters.

Part I handles military, terrorist, and disaster incidents. It includes three excellent chapters, of which the first deals with military and terrorist incidents, the second concerns community and individual stress reactions to chemical exposures, and the third discusses ionizing radiation.

In the first chapter, the use of chemical weapons, such as organophosphate warfare chemicals or nerve gases and cyanide, are described, and stress reactions to chemical warfare are discussed. The necessity for psychiatric intervention for both physiological and stress-induced symptoms is emphasized with the growing threat from terrorist incidents. Signs and symptoms attributed to Agent Orange, a herbicide used in the Vietnam War as a defoliant, and characteristics of the Gulf War syndrome are described in detail.

The second chapter covers the importance of community and individual stress reactions to hazardous waste sites and other major chronic community exposures, as well as acute mass disasters, such as the chemical reactor explosion in Seveso, Italy, and the Chernobyl nuclear accident. Origins of the stress responses to chemical exposures are discussed, as are the roles of perception and interpretation, bias, and litigation. A table lists the differences between technological and natural disasters. The symptoms and the treatment of mass hysteria are also described.

In the third chapter, psychiatric signs and symptoms attributed to the direct and traumatic effects of radiation, both therapeutic radiation and nuclear bombs or accidents, are described. It is stated that the invisibility of radiation and the unpredictability of the prognosis contribute to stress. The psychosocial reactions

that occurred in Hiroshima, Three Mile Island, and Chernobyl are discussed thoroughly. In radiation accidents, the susceptibility of both the victims and the rescuers are recognized.

Part II deals with pesticides. The author states that few studies have used well-conceived control groups or epidemiologic methods. The limited information comes from case reports. The first chapter describes insecticides and covers chlorinated hydrocarbons, organophosphates, and carbamates. The increased incidence of poisonings in developing countries is recognized. Several mass insecticide poisonings (eg, through contaminated food) are described. The second chapter deals with methyl bromide and other fumigants.

Part III handles exposure to metals and covers aluminum, arsenic, lead, manganese, mercury, thallium, and tin. With regard to arsenic poisoning, the author points out that industrial and environmental sources cause most modern cases of arsenic poisoning. However, in the absence of occupational or environmental risk factors, suicide or homicide should also be considered a cause of arsenic poisoning. The chapter describes both adult and childhood poisonings by inorganic and organic lead. Of the heavy metals, mercury has medical, socioeconomic, and environmental importance second only to lead. The safety of mercury dental amalgams is also discussed.

Part IV deals with solvents. A table contains an extensive list of the higher risk industrial, environmental, and household settings for solvent exposure. The psychiatric signs and symptoms attributed to accidental or occupational exposure to various solvents (eg, carbon disulfide, halogenated hydrocarbons, and aromatic hydrocarbons) are described. The neurotoxicity of carbon disulfide, even at low doses, or many other solvents at high doses are recognized. The controversy over the neurotoxicity of low levels of occupational exposure is discussed. The results of the epidemiologic studies performed by Scandinavian researchers in the 1960s on occupational disabilities due to exposure to solvents is questioned on the basis of claimed faults in the methodology, such as poor control for workers' compensation, solvent type, dose and duration of exposure, psychiatric disorders, alcohol use, and litigation. On the other hand, it is emphasized that the majority of recently performed controlled studies support the findings of a deleterious effect of low-level exposures.

Solvent abuse is also discussed, and the commercial solvents used for such abuse are listed in a table. The paucity of literature on solvent abuse in comparison with that on drug abuse, in spite of its prevalence and medical importance, is recognized. It is emphasized that, due to the poor methodology of most epidemiologic studies on solvent abuse, several major issues remain unresolved, especially whether solvent abuse causes or

results from the psychiatric dysfunctions observed in solvent abusers, their families, and their communities.

Inhalant-, anesthetic-, and solvent-related disorders recognized in the DSM-IV-TR are presented in a table. Most inhalants are solvents, but the DSM-IV-TR text attributes only the following five of the eight disorders associated with inhalants to solvents: substance-induced delirium, persisting amnesic disorder, symptoms of dementia, psychotic disorder, and anxiety disorder. The author points out that the association of solvents with dementia is more controversial than their association with mood disorders, but the DSM-IV-TR does not recognize mood disorder resulting from solvent exposure. The nosology of solvent poisoning proposed by a 1987 international consensus meeting on the occupational effects of solvent exposures complicates the application of the DSM-IV-TR to medical literature. The author states that DSM-IV-TR-based diagnoses should replace the World Health Organization diagnostic categories to facilitate standardized research.

Part V handles toxic gases, carbon monoxide, and hydrogen sulfide. It is recognized that survivors of carbon monoxide poisoning can experience chronic and progressive neurological and psychiatric deterioration. Recent theories attributed to the mechanism of the delayed neuropsychiatric symptoms are described, but, so far, the mechanism remains elusive. Many psychiatric symptoms probably result from anoxia during the loss of consciousness, but it is recognized that no formal studies exist to support this notion.

Part VI handles other chemicals and syndromes. In the first two chapters signs and symptoms attributed to polybrominated biphenyls and polychlorinated biphenyls, as well as those of boron, carbon dioxide, copper, silicone, vanadium, and vinyl chloride poisoning, are described. Furthermore, case reports and epidemiologic studies of other substances with psychiatric importance, such as acrylamide and carbon tetrachloride, are described in a table. Geophagia, a culture-bound syndrome, is also described in the second chapter.

Probably the most controversial topic — sensitivity syndromes — is discussed in the final chapter, including multiple chemical sensitivities, the sick building syndrome, and the association between food additives and childhood behavior disorders. It is emphasized that major professional differences exist between mainstream medicine and "ecological medicine" over multiple chemical sensitivities and the sick building syndrome, the latter being more acceptable to the mainstream than the former.

Other names of multiple chemical sensitivities are listed in a table reflecting the unresolved definition of the disorder. The opponents' and proponents' views of multiple chemical sensitivities are described. The author lists three issues in the area of chemical susceptibility

that need further research. First, the medical literature contains reports that are not associated with multiple chemical sensitivity ideology and that describe persons with enhanced sensitivities to chemical exposures after initial exposures. These reactions could result from posttraumatic stress disorder, in which later exposures to odors induce recurrent symptoms. The role of odor in evoking the symptoms of posttraumatic stress disorder needs further study. Second, a growing body of literature supports the notion that some persons have an enhanced genetic susceptibility to low doses of chemicals. This susceptibility does not equate to a physiological basis of multiple chemical sensitivities, but it does represent an opportunity to identify persons who may develop unexpected toxic responses. Third, toxicologic and epidemiologic information is lacking for women who may have a sex-based sensitivity to certain chemical classes.

The possible association between food additives and childhood behavior disorders came to the public's attention before well-controlled studies tested the theory. It is emphasized that several investigations that used placebo-controlled, double-blind crossover experiments did not confirm the association. Evaluation and treatment recommendations for children's hyperactivity attributed to food additives are summarized in a table.

The sick building syndrome is described as constituting a type of building-related illness with several subjective symptoms. In the absence of objective findings of disease, the literature supports a multifactorial cause of the sick building syndrome that includes elements of mass hysteria and somatization. Psychosocial, environmental, and medical factors associated with outbreaks of the sick building syndrome are listed in a table.

Overall, this book is useful and up-to-date. The author has succeeded in putting together a document that excellently reviews current knowledge on chemical toxins and psychiatric syndromes. The clear language and user-friendly style makes it easy and enjoyable to read. I would recommend it for all researchers of the field and for any psychiatrist, particularly those working in general hospitals or crisis intervention settings. It would also be useful for libraries dealing with occupational medicine.

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