

Concern grows over environment

# Electromagnetic pollution coming

WASHINGTON — A toaster that plays music, a truck that brakes when a CB radio transmits and a heart pacemaker that goes awry are symptoms of what may become one of the nation's most perplexing environmental problems in the 1980s — electromagnetic pollution. This is the plethora of radio waves and other energy radiated from the burgeoning number of electronic products and components in our homes, offices, factories and vehicles.

Experts say the electronics revolution is only in its infancy and as engineers apply solidstate circuitry and the minicomputers known as microprocessors to more and more jobs, their unintended consequences may become more serious. The big problem is interference. Signals from one device can disrupt another. Another possible problem may be biological effects that might be caused in some cases by the non-ionizing types of electromagnetic

radiation usually considered harmless. Natural electromagnetic waves have been around as long as the Earth has, but the amount of man-made electromagnetic waves in the environment was relatively slight until after World War II. The increase since then has been dramatic. According to Charles K. S. Miller, of the National Bureau of Standards, there are now 4,524 AM and 3,975 FM radio stations in the

United States, 993 television stations, about 30 million CB radios and more than 35 million industrial radio frequency sources in manufacturing plants. In addition, there are countless mobile radios for police, fire, sea and airmen, radar for harbors, airports and national defense, microwave relay communications links, shortwave radio and microwave ovens. Even if the radiation levels are below those at which biological effects could occur, Miller said the radiation can still be intense enough to affect the performance of the multitude of solid-state devices in use today.

Such a problem developed, for example, when electronically controlled anti-skid braking systems were installed on trucks and buses. It was found that the operation of a CB radio nearby could trigger the braking mechanism. Some 18,000 new trucks were recalled in 1975 because of this problem. When electronic devices are used to control a vital function, such as the regulation of the heartbeat by pacemakers, interference can be particularly dangerous. It is possible that interference could trick some devices into erroneously allowing a heart to beat too slowly or quickly. It can also be annoying when a household toaster starts playing music because it happens to be near a radio station, or when the picture on your television suddenly looks as if a blizzard hit.

# Dredge dumping seen worse on land than sea

Overall environmental damage of disposal of material dredged from harbors and rivers may be less if it's done in deep water than on land, some experts believe. Evidence supporting open water disposal was presented at the 11th Dredging Seminar in New Orleans. Dredging is essential to keep channels open for export and import cargoes. Accidental spillage of some cargoes in poorly maintained channels is viewed as having worse effects on marine ecological systems than dredging.

porting life forms normally found there. Findings were presented in a paper, "Impacts of Open Water Dredged Material Discharge," by Drs. Robert M. Engler and Richard K. Peddicord. Their studies were conducted at the U. S. Army Engineer Waterways Experiment Station in Vicksburg, Miss. They concluded that open water disposal "may generally have a negligible impact on physical, chemical and biological variables," for the site studied.

The idea was discussed earlier at the second International Symposium on Dredging Technology at Texas A&M in November, 1977. The seminar was sponsored by the Texas A&M dredging center and the Sea Grant Program in cooperation with the Gulf Coast Dredging Association and Gulf Chapter of the World Dredging Association. A paper by Drs. Willis E. Pequegnat, of Texas A&M's Oceanography Department, and David D. Smith stated that although some temporary and local damage may occur to the species at the bottom of

the water, dumping of dredge spoils in deeper waters... will not cause significant or long-lasting damage to the ocean floor species. It is believed that the oceans' bottom-dwelling organisms can easily burrow up through spoil and survive. Herbich, with Frank DiGeorge and Dr. Wayne A. Dunlap of Texas, also presented a paper at the New Orleans seminar. Titled "Laboratory Determination of Bulking Factors," it states that bulking, a tendency of dredged material to occupy more space, tends to decrease with increasing water salinity. Other seminar papers dealt with dredged sediment stability, dredged material as a resource, containment area performance, disposal operations and others. The seminar involved 115 participants from most of the states and Korea, Venezuela, Canada and the Canal Zone.

Present federal regulations require discharge of dredged material on land, at cost higher than if it were done at sea. Dr. John B. Herbich, director of the Center for Dredging Studies at Texas A&M University said that disposal on land is five to 15 times more costly than open water discharge. "We've got to re-evaluate our thinking," Herbich said. "Are we doing more damage by dumping on land? He emphasized that besides removing land from agricultural production, dredge spoil kills vegetation and prevents land from sup-

porting life forms normally found there. Findings were presented in a paper, "Impacts of Open Water Dredged Material Discharge," by Drs. Robert M. Engler and Richard K. Peddicord. Their studies were conducted at the U. S. Army Engineer Waterways Experiment Station in Vicksburg, Miss. They concluded that open water disposal "may generally have a negligible impact on physical, chemical and biological variables," for the site studied. The idea was discussed earlier at the second International Symposium on Dredging Technology at Texas A&M in November, 1977. The seminar was sponsored by the Texas A&M dredging center and the Sea Grant Program in cooperation with the Gulf Coast Dredging Association and Gulf Chapter of the World Dredging Association. A paper by Drs. Willis E. Pequegnat, of Texas A&M's Oceanography Department, and David D. Smith stated that although some temporary and local damage may occur to the species at the bottom of

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