

Materials shortage shocks ahead?

by Colin Norman, Washington

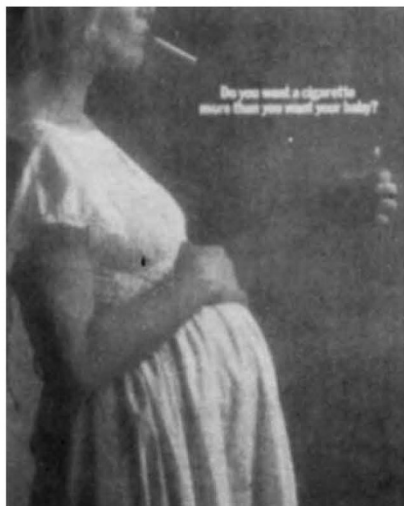
The National Academy of Sciences committee report forecasting a bleak future for fossil fuels in the US (February 20) was not limited exclusively to the supply and demand for oil and gas. "Man faces the prospect of a series of shocks of varying severity as shortages occur in one material after another", it suggests, and adds that "the first real shortages (are) perhaps only a few years away."

The overriding conclusion that runs through the 348-page report (prepared by COMRATE—the academy's Committee on Minerals Resources and the Environment) is that more effort is needed to conserve materials and to improve the efficiency with which they are used. "Above all", it states, "we should adopt a conservation ethic that has at its heart avoidance of waste and more efficient use of materials."

● **Copper.** Although deposits of copper within the United States are, in theory, sufficient to meet demand at least until the end of the century, the report notes that its availability will be dictated by success in finding new deposits and that there is also likely to be a shortage of smelter capacity. COMRATE therefore concludes that "we do not foresee continued United States self-sufficiency in production of primary copper and therefore recommend a strong policy of conservation". The only large, unexploited deposits of copper so far identified are manganese nodules on the deep seabed, and the report recommends that "developing the recovery of copper and associated metals from these nodules be encouraged with due regard to the potential impact of undersea mining on the environment". Surprisingly, however, the report has virtually nothing to say on the touchy political question of how exploitation of manganese resources should be regulated—an issue which sharply divided the Law of the Sea Conference last year, and according to most American mining companies, until the political questions are settled at an international level the prospects for deepsea mining are cloudy, at best.

● **Substitutes** need to be found for three materials which have unique uses, and whose supply is threatened, COMRATE suggests. They are helium, which is likely to be in high demand for use as a coolant for superconductors, particularly for transmission lines; mercury, which has no substitute for its use in mercury-wetted switches, and asbestos.

As far as helium is concerned, the



Is it fair to force your baby to smoke cigarettes?



This is what happens if you smoke when you're pregnant.

Every time you inhale you fill your lungs with nicotine and carbon monoxide.

Your blood carries these impurities through the umbilical cord into your baby's bloodstream.


Smoking can restrict your baby's normal growth inside the womb. It can make him underdeveloped and underweight at birth. Which, in turn, can make him vulnerable to illness in the first delicate weeks of his life.

It can even kill him. Last year, in Britain alone, over 1,500 babies might not have died if their mothers had given up smoking when they were pregnant.

If you give up smoking when you're pregnant your baby will be as healthy as if you'd never smoked.

THE 1975 campaign of the Health Education Council to warn pregnant mothers of the dangers of smoking has just begun. Mr Alastair Mackie, the council's Director-General, claims "we do not want to increase the usual anxiety felt during pregnancy . . . [The campaign] exploits the success

achieved last year when research showed that behavioural change followed our advertising. We learned useful lessons, and these will be put into effect in the new project". Above (left): new project; right: the old. Below: new copy. No prizes for spotting a 'useful lesson' learned.

When a pregnant woman smokes she puts her unborn baby's life at risk. Every time she inhales, she poisons her baby's bloodstream with nicotine and carbon monoxide. Smoking can restrict your baby's growth inside the womb. It can make him underdeveloped and underweight at birth. It can even kill him. In just one year, in Britain alone, over 1,500 babies might not have died if their mothers had given up smoking when they were pregnant. If you give up smoking when you're pregnant your baby will be as healthy as if you'd never smoked.  The Health Education Council

report recommends that conservation should be encouraged and that alternatives be found for such applications as arc welding and dispersive uses such as purging rockets and spaceships.

● **COMRATE** further suggests that alternatives be found for chromium, gold, platinum and palladium since those metals are largely concentrated in a few countries, thereby opening up the possibility that the United States could become vulnerable to embargoes or international cartels. It singles out chromium in particular, since virtually all the world's resources are concentrated in Rhodesia and South Africa. In addition, the report suggests that substitutes be found for the use of tin in view of potential world-wide shortages of the metal. The report emphasises, however, that "the discovery and development of new and improved materials as possible substitutes for existing ones takes time and . . . the process is generally driven by clearly perceived functional objectives rather than by ill-placed optimism that 'something will turn up when the crunch comes'".

● **Coal.** Although the report notes that there should be no shortage of coal supplies in the United States for more than a century, it has a few complaints

to make about the adequacy of research and regulations designed to ensure that coal is mined and used more carefully.

As far as mining is concerned, the report suggests that there is an "urgent need" to overhaul methods for detecting, diagnosing and compensating for pneumoconiosis, the so-called Black Lung Disease which claims the lives of thousands of miners, and which in terms of compensation alone may cost up to \$8,000 million a year by 1980.

The report also urges that efforts to mitigate the health hazards associated with the use of coal be stepped up. In particular, it is recommended that more research be conducted on the health effects of small particles, and on the growing problems of acid rain caused by the oxidation of sulphur dioxide to sulphuric acid. As a matter of priority, the report also urges that equipment for removing oxides of sulphur—so called stack gas scrubbers—should be installed in plants where high sulphur fuels are burnt. Several electric utilities, most notably the American Electric Power company, have been fiercely resisting such requirements and have been conducting advertising campaigns running into millions of dollars to try to win public sympathy for their case. □