

not now use and making out of them these metallized pellets, you end up with a material in the form which the furnaces can use.

Chairman MILLER. In many instances, isn't the taconite prerefined near the mining place?

Dr. HIBBARD. Yes.

Chairman MILLER. And, it can be refined there until it gets rid of the surplus materials, as I understand the process.

Dr. HIBBARD. In general, the taconites that are used are magnetite which is magnetic, and in some cases hematite, which are between 64, 65, and maybe 80 percent iron in their contents. These are pelletized and roasted and so-called metallized to the point where the material increases in its iron content to maybe 80 to 90 percent.

However, with the present economics, the so-called low-grade non-magnetic taconites are not used. These are taconites which have only 25 percent iron.

Chairman MILLER. I know; I was in Australia about a year ago and they have made some great discoveries. They are now shipping taconite to Japan, I believe.

Dr. HIBBARD. In the western part of Australia as you know they have these tremendous mesas which are solid hematites. They are just beautiful. In fact, they are equivalent if not better than some of the Mesabi ores. We would just love to have this in the United States.

Mr. MOSHER. Are you saying, sir, that there is less bulk in the compressed junk automobile than there is in the taconite and therefore it pays to ship the less bulky car junk to the taconite.

Dr. HIBBARD. The percentage of iron per pound in the junk automobile as it is chopped up and shipped is much higher than the percentage of iron per pound in the taconite.

So, under normal circumstances you would move the junk autos to the taconite and not the taconite to the junk autos.

If I could move on there are some answers to other questions in the testimony. I move to question C(5), the question of the fragmentation of research. I think there are examples where research has been fragmented and where a piecemeal approach has been used to solve one problem while creating another.

A good example would be a use of aqueous scrubbing of flue gas to remove sulfur oxides. This might remove the sulfur oxides from the stack effluents but would form low-grade dilute sulfuric acid which would be very difficult to dispose of, either causing a stream pollution problem or a solid wastes pollution problem to replace the atmospheric one.

Again, we believe that the systems approach can help here.

I would like to also move to question E(1) regarding the Federal, State, and local problems of applying technology. We have a good example of State-Federal cooperation in our own area. The Appalachian Regional Development Act calls for demonstration projects concerning the alleviation of surface subsidence over mines, putting out of coal fires, and incidentally there are over 200 coal beds in this country which are burning right today. They are bellowing smoke and causing the loss of good coal and are general problems in health and safety.