SURVEILLANCE TECHNIQUES OF INTEREST

JOSEPH K. WAGONER

DR. LLOYD:

Dr. Wagoner will make a transition from what we were talking about this morning to what we shall be talking about this afternoon. He'll be followed by Mr. Baier who will chair the afternoon session.

DR. WAGONER:

Thank you. We're basically going to lay out, in an open spirit, what we feel, as a governmental agency, is the course of action for research into the problems of carcinogenic risks in the styrene-butadiene rubber (SBR) industry. I wish to commend the exemplary endorsement of the B. F. Goodrich Chemical Company for an industry-wide study of the SBR industry. I also look forward to a similar expression of support from all of the other industry and labor representatives in attendance today.

As you well know, and as we certainly openly admit, our current surveillance mechanisms are either limited or nonexistent. The truth is, however, if there is a will there is a way. I'm going to present a method whereby we can get a rapid resolution to the extent of the problem, the magnitude of the problem, and the variety of biological responses, whether carcinogenic or noncarcinogenic, involved in employment in the SBR industry. On the basis of what we have heard this morning, I would also encourage the utilization of this method for an investigation of the styrene industry.

Data recently published by Hoover and Fraumeni of the National Cancer Institute clearly demonstrate that counties in the United States having a high density of chemical industries have elevated risks of cancer relative to the total population of the United States. Specifically as seen in the table below the risk of cancer of the lung, of the bladder, and of the liver and gallbladder are significantly higher among chemical-industry counties.

Average annual age-adjusted mortality rates among white males for all malignancies and for cancer of four specific sites in the total U.S. and in 139 chemical-industry counties (1950-1969).

	Sites			
Area	Total	Lung	Bladder	Liver and gallbladder
Chemical-industry counties	179.81	41.79	7.19	5.62
Total U.S.	174.04†	37.93†	6.78†	5.16†

†Difference between rates significant at $P<0.05$.

Even more germane to the study method that I wish to propose are data seen in this table.

Average annual age-adjusted cancer mortality rates among white males in Hamilton County, Ohio, and those in counties not having large chemical industries but cities >250,000 population (1950-1969).

	Sites		
Counties containing large metropolitan areas	Lung	Bladder	Liver and gallbladder
Hamilton County, Ohio	47.2	8.8	6.9
Other counties	45.1	8.0	5.8

Within the 139 counties in the United States classified as chemical industry counties, is Hamilton County, Ohio, a county just across the river from this meeting site. That county, containing Cincinnati, a city of greater than 250,000 population, is the only county having high rates of cancer for all three sites, i.e., lung, bladder, and liver and gallbladder when compared with other nonchemical industry counties having cities of greater than 250,000 population. These data strongly indicate that the increased risk of cancer in Hamilton County, Ohio, cannot be associated only with the ills of urbanization or urban pollution.

Is it possible to identify in more detail specific etiological (industrial) agents contributing to the excess of cancer in Hamilton County, Ohio?

Yes! Dr. Mancuso using two different study approaches demonstrated that benzidine, a substance formerly produced by Cincinnati Chemical Company, was contributing to the excess of bladder cancer in Hamilton County, Ohio. As shown in this table, using Social Security Administration quarterly employment statements as a data source, Dr. Mancuso has demonstrated that workers exposed to benzidine in Cincinnati were dying of bladder cancer at a rate fifteen times higher than other residents of Ohio (6 obs. vs. 0.41 exp.).

Cancer mortality among males employed at a Cincinnati, Ohio, chemical company in 1937 and traced through 1956.

Data source	Cause of death	White		Nonwhite		Total		
		Obs	Exp	Obs	Exp	Obs	Exp	SMR
Social Security Administration records	Total cancer	14	10.30	4	4.30	18	14.60	123
	Bladder cancer	4	0.30	2	0.11	6	0.41	1463
Company personnel records	Total cancer	11	8.38	3	3.01	14	11.39	123
	Bladder cancer	4	0.25	2	0.08	6	0.33	1818

Using company employment records from that same plant as a data source, Dr. Mancuso also was able to demonstrate that workers exposed to benzidine were at an increased risk of bladder cancer (6 obs. vs. 0.33 exp.).

This latter procedure is extremely time-consuming and requires microfilm teams going through personnel records systems, a process often considered to be disruptive to industry. What I am now proposing at much less cost to our limited manpower, at much less cost to our monetary resources, and at much less impact to you in industry, is a method using the Social Security Administration to investigate potential occupational health problems.

Now, lest one consider this above example to be merely a chance occurrence, I should like to present a second example. Dr. Mancuso in 1967, again using quarterly employment statements from the Social Security Administration, has demonstrated an increased risk of total cancer and of respiratory tract cancer among both male and female employees of one major asbestos manufacturing complex utilizing predominantly chrysotile asbestos in textile friction and packing products. See table below. Studies by NIOSH of this same asbestos manufacturing complex, using company personnel records, has demonstrated an increased risk of total cancer and of respiratory tract cancer of the same order of magnitude among both male and female employees.

Thus, there are now two examples which demonstrate the utility and the validity of the Social Security Administration system as a rapid means for resolving "our" problem with the SBR industry; and I emphasize "our" because we (government, labor, and management) are all members of this society in which we live and work.

Mortality patterns among individuals employed at a Pennsylvania asbestos manufacturing plant.

Data source	Cause of death	Males		Females		Total		
		Obs	Exp	Obs	Exp	Obs	Exp	SMR
Social Security Administration records	All causes	166	130.35	20	14.67	186	145.02	128
	Total cancer	44	18.91	10	4.36	54	23.27	232
	Respiratory cancer	16	5.91	4	0.19	20	6.10	328
Company personnel records	All causes	594	480.25	61	46.59	655	526.84	124
	Total cancer	95	88.08	22	7.74	117	95.82	122
	Respiratory cancer	39	18.21	7	0.63	46	18.84	244

You will recall that I mentioned earlier that the three counties contiguous to Port Neches, i.e., Jefferson, Orange, and Chambers, have leukemia rates significantly higher than those for Texas as a state and than those for the United States as a whole. I again bring this up to draw the analogy with Hamilton County, Ohio, and the benzidine plant.

I submit that we as a governmental agency feel the necessity and the urgency to use the Social Security Administration system for a resolution of the leukemia problem in the SBR industry. Certainly, the time required to resolve our problem of leukemia in the SBR industry would be significantly reduced using this study approach.

I also solicit your open endorsement, industry by industry, to cooperate with us in this study approach as was so exemplarily put forth earlier this morning by B. F. Goodrich Company.

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