

BALTIMORE CITY HEALTH DEPARTMENT

MEMORANDUM

NOV 6 'REC'D

November 3, 1972

TO — Hon. William Donald Schaefer, Mayor of Baltimore  
FROM — Dr. Robert E. Farber, Commissioner of Health *Robert Farber*  
SUBJECT — Federal Report on Air Pollution as Reported in the Morning Sun of August 8, 1972

This is in reply to your Memoranda 83 and 141 concerning the above report. First, I wish to apologize for the long delay in reply; but as you can see from the attached memorandum from Mr. Elkins W. Dahle, Jr., Director of the Bureau of Industrial Hygiene, he has gone to great lengths explaining the whole problem.

Realizing that probably you do not have time to read Mr. Dahle's lengthy report, I will try to give you a brief synopsis.

The Federal report which shows the city's air was a very biased reporting. It was based on a very limited number of readings from one sampling station. The particular sampling station involved was on the roof of the Fire Department, and the high readings were obtained during the period of June through August of 1970. The reason for these readings is difficult to determine; but it must be recalled that during this period of time, there was considerable demolition taking place in the downtown area, such as the Inner Harbor Project and the construction of a new Police and Post Office Building. Furthermore, the Fire Department building itself was being sandblasted in August. All of these activities would have increased the amount of particulate matter in the air and thereby raise the overall pollution levels.

I feel there has been considerable progress made in Baltimore City over the past few years in controlling air pollution. All the large industries and many of the small ones have now filed plans of compliance which will enable them to reduce greatly whatever pollutants they are now putting into the air within a reasonable period of time. Also, many industries have spent considerable amounts of money in air pollution prevention equipment; for example, Armco, out on Edison Highway, a million dollars for a bag plant. The Gas & Electric Company has greatly improved its Westport operation; and as you realize, there are two ordinances pending before the City Council for loans to private industry to purchase air pollution control equipment. All the public schools have been converted from coal to either natural gas or light weight oil. Many industries have likewise converted from coal to gas or light weight oil.

The major problem with air pollution in the city is from the automobile; and until new Federal controls on the exhaust of automobiles take effect, they will continue to cause difficulty.

I hope the above answers your questions. The Federal Government and newspapers like to play the numbers game without fully realizing what they are measuring and comparing.

MEMORANDUM

November 2, 1972

- Dr. Robert E. Farber, through Mr. George W. Schucker  
COM - Mr. Elkins W. Dahle, Jr., Bureau of Industrial Hygiene  
**SUBJECT** - Responding to the Council on Environmental Quality Report of 1972

This is in reply to your earlier request concerning a news article appearing in the August 8, 1972, Morning Sun mentioning a report put out by the Federal Government that showed Baltimore's air to be dirtier as compared to other cities in the United States.

Under the National Environmental Policy Act of 1969, the Council on Environmental Quality is required to report at least once a year on the state of the environment and efforts to improve it.

The First Annual Report suggested a variety of directions for Federal, State and Local action - both legislative and administrative.

The Second Annual Report examined in depth two fundamental aspects of environmental quality - economics and legal developments.

The Third Annual Report was based on the council's discussion of the various factors of the environment involving land use, noise, toxic substances, solid waste, water quality and air quality and provided data to try to evaluate the quality of the environment.

In the discussion in connection with the air quality section of the report, the Council attempted to use various indexes for the first time in an effort to show trends in cities. These indexes are: MAQI (Mitre Air Quality Index), ORAQI (Oak Ridge Air Quality Index) and EVI (Extreme Value Index.) Each of these indexes is quite involved in the formulas used for their calculation. Basically, the MAQI Index is based on maximum values of the various long term and short term average concentrations of pollutants compared to secondary National Ambient Air Quality Standards.

The ORAQI Index is based on annual means of the various pollutants as it compares to the secondary National Ambient Air Quality Standards.

The EVI Index is based only on the sum of pollutant concentrations which exceed the Secondary National Ambient Air Quality Standard. The accumulation of these "extreme" values is then compared with that standard. In attachment No. 1 you will see a photostatic copy of the chart contained in the Third Annual Report. Among the three indexes shown, you will note that it was the EVI Index upon which the article indicated that Baltimore's pollutant levels from 1968 to 1970 have increased more than two (2) times.

The data for this report was obtained from the National Air Network station at the Fire Department Headquarters building on Lexington Street. The Baltimore City Health Department has been operating this station since 1956; first for the Public Health Service, and now for the Environmental Protection Agency. There are approximately 26 samples taken per year. Of the three (3) pollutants (suspended particulates, sulfur dioxide, nitrogen dioxide) that are sampled and were used in the indexes, it was the suspended particulates that affected the EVI Index the most. This sampling consists of an 8" by 10" filter being placed on a sampler (High Volume Air Sampler) and operated for 24 hours then analyzed for the total amount of dust collected. The values obtained are recorded in micrograms per cubic meter. The values for the individual samples for the year 1968 and 1970 are shown below:

		<u>1968</u>			<u>1970</u>		
1-	5-68	-	92		4-29-68	-	84
1-	20-68	-	132		5-11-68	-	94
1-	29-68	-	204		5-13-68	-	48
2-	19-68	-	96		5-22-68	-	67
2-	27-68	-	189		6- 6-68	-	109
3-	17-68	-	52		6-20-68	-	36
3-	28-68	-	79				
					7-	5-68	- 113
					7-	16-68	- 90
					7-31-68	-	106
					8-17-68	-	78
					8-30-68	-	276
					9-13-68	-	80
					9-25-68	-	149
					7-	4-70	- 468
					7-15-70	-	251
					7-30-70	-	183
					8-14-70	-	227
					8-26-70	-	195
					9-11-70	-	74
					9-20-70	-	83
					10-20-70	-	98
					10-27-70	-	71
					11- 6-70	-	77
					11-15-70	-	31
					12- 5-70	-	82
					12-14-70	-	99
					12-22-70	-	166

You will note the highest reading in 1970 was 468 micrograms per cubic meter as compared to a maximum reading of 276 micrograms per cubic meter in 1968. This unusually high reading and others that occurred in the three-month period from June through August (seven readings in a row that exceeded the National Standard of 150 micrograms per cubic meter) were the cause for the sharp increase in the EVI Index for 1970, as shown in attachment No. 1.

It is our feeling that the only way to evaluate the ambient levels within an area is to look at samples over a long period of time rather than to look at individual extreme values or one or two years of data. To give you a

picture of the data from the National Air Sampling Network over a period of time, you will find in attachment No. 2 the data from this since 1956. This chart includes the annual average, maximum, minimum, and the number of samples for each year. You will note we have other years with high maximums (729 in 1956 and 435 in 1964) other than 1970 on which the report was based. It is also interesting to note that, in general, the annual average tends to be reducing.

In my discussion with representatives of the Council of Environmental Quality, I pointed out to them that indexes based on extreme values only do not very well represent the ambient air for an area as there are various factors that could affect any individual sample on one (1) particular day. First of all, there are certain activities which would affect the sampling site and for which, basically, there are no controls. These would include sandblasting of buildings, demolition of buildings, and a single or multi-alarm fire within the area such that the plume of the fire could travel in the direction of the sampling point. There could, also, be human error that occurs in any individual sampling; first, with the field man not reading the flowmeter accurately or failure to remove the sample after 24 hours, thus allowing a greater build-up of particulate matter during the longer period along with other errors that the laboratory may possibly make when the webs are analyzed, all of which could affect one individual web. Also, breakdown of control equipment installed on equipment at our various industrial firms that may take a short period of time to fix could result in pollution that would affect the sampler on a particular day.

It was also pointed out that future reports should use long term trends rather than short terms such as three years, since yearly averages will fluctuate the same as do daily samples and monthly averages.

While it would be impossible to explain without question the exact cause or causes that produced the many high readings at Fire Department Headquarters in 1970, there is one explanation that should be considered. In 1970, there was a great amount of demolition, construction, and sandblasting in the downtown area. In that year, both the new Post Office and Police Department buildings were in the very early stages of construction, and major demolition of buildings in the inner harbor area was creating a great deal of dust. In August, the Fire Department Headquarters building itself was being sandblasted. These operations definitely increased the particle concentration in the air downtown, and this condition seems to have been verified by the high readings recorded at the Fire Department Headquarters.

It was unfortunate that the condition of the air in Baltimore City was based on data from only one sampling site. As indicated above, the local conditions in the vicinity of a particular site can be influenced by operations and activities that are neither typical nor city-wide. The two other sampling sites in the City in 1970, both operated by the Health Department, indicated much better air quality than did the downtown station; and one site actually showed a decrease in particulate pollution compared to 1968. Attachment No. 3 compares the data from the downtown sampling site and these other sampling sites.

972

To show you that the general trend for suspended particulate has been downward over a long period, I have enclosed graphs for data three of the sampling stations operated by the Baltimore City Health Department. These graphs are part of a report on all sampling data for the City of Baltimore that is to be made available in about a month. Even though the data does show Baltimore has improved its air, we still have not reached the ambient air quality levels established by the State of Maryland or the Federal Government. These values are as follows:

STATE AMBIENT AIR QUALITY STANDARDS

All Values in Micrograms Per Cubic Meter

	<u>More Adverse Range</u>	<u>Serious Level</u>
Annual Average	Lower Limit	Upper Limit
24-Hour Maximum (Exceeded Once Per Year)	65	75

FEDERAL AMBIENT AIR QUALITY STANDARDS

All Values in Micrograms Per Cubic Meter

	<u>Primary Standard</u>	<u>Secondary Standard</u>
Annual Geometric Mean	75	60
24-Hour Maximum (Exceeded Once Per Year)	260	150

In connection with the other cities listed in the Environmental Quality Report, I have been able to obtain only some limited data. I do not know how their sampling sites compare to Baltimore and have no data on their maximum values. The listing below shows only annual averages and are recorded as micrograms per cubic meter.

	<u>1970</u>	<u>1971</u>
New York	123	NA
Birmingham	NA	105
Washington, D.C.	NA	73
Philadelphia	135	99

(NA) NOT AVAILABLE

- 5 -

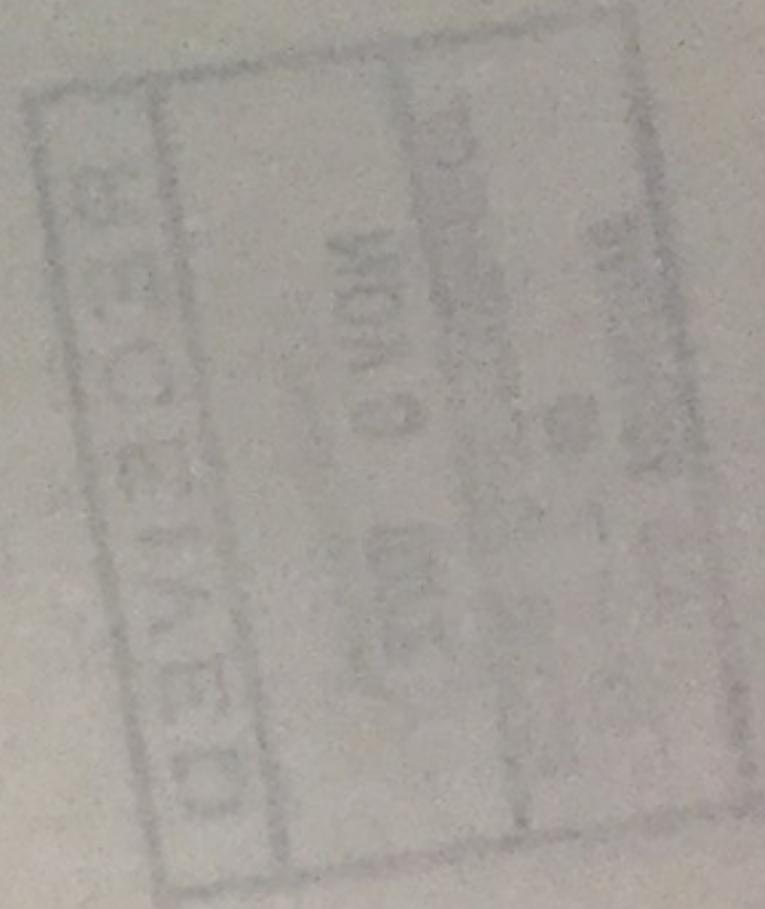
November 2, 1972

Should you desire any additional information, please let me know.

*Elkins W. Shable Jr.*

EWDJr:dg

cc : Mr. Schucker



## BALTIMORE CITY HEALTH DEPARTMENT

## Bureau of Industrial Hygiene

## DATA FROM NATIONAL AIR SAMPLING NETWORK

Air Sampling Station Located at the Fire Department Headquarters Building

Lexington and Gay Streets

Data recorded as micrograms per cubic meter

<u>YEAR</u>	<u>AVERAGE</u>	<u>MINIMUM</u>	<u>MAXIMUM</u>	<u>NUMBER OF SAMPLES</u>
1956	247	104	729	28
1957	150	77	301	26
1958	127	65	287	25
1959	153	63	343	25
1960	148	48	495	25
1961	142	74	340	26
1962	137	80	329	26
1963	137	43	292	26
1964	158	63	435	24
1965	132	55	264	26
1966	144	70	296	26
1967	132	49	285	25
1968	110	36	276	26
1969	117	45	265	24
1970	136	31	468	27
1971	100	42	285	24
1972 1st quarter	103	50	166	7

10-25-72

E.W.D.

(Attachment No. 2)

## BALTIMORE CITY HEALTH DEPARTMENT

## Bureau of Industrial Hygiene

Comparison of Particulate Data from Sampling Site at  
 Fire Department Headquarters with Data from other  
 Sampling Sites in the City - - 1968 and 1970

	<u>Fire Dept. Hdqtrs.</u>	<u>Morgan State College</u>	<u>Northwest Police Station</u>
	<u>NASN</u>	<u>BCHD Sampler</u>	<u>Sampler</u>
<u>1968</u>			
Total No. of Samples	26	106	84
No. of Samples exceeding Secondary Standard	5	26	13
Per cent of Samples exceeding Secondary Standard	19%	24%	15%
<u>1970</u>			
Total No. of Samples	27	198	164
No. of Samples exceeding Secondary Standard	10	51	12
Per cent of Samples exceeding Secondary Standard	37%	26%	7%
			47
			5
			11%

(Attachment No. 3)