FILE NAME: Rogers Corporation (ROG)

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DOCUMENT DESCRIPTION: Unpublished Report - Proposed Asbestos Standards - Weaknesses

PROPOSED ASBESTOS STANDARD - Weaknesses

1. Entire proposal is based on a statistical "envelope" on the incidence of Connecticut Mesothelioma plotted against asbestos consumption for the period of 1900 to 1969.

a) Whole concept is based on asbestos as the sole cause of this type of cancer. It is not. Human cases have been documented as being related to exposure to zeolites, jute, sugar cane bagesse as well as asbestos, especially crocidolite. Additionally, animal studies have shown that mesothelioma can be induced by injection or surgical implantation of the following: brucite, ceramic fiber (?), barium sulfate, glass powder, and aluminum oxide.

b) The prime justification for proposing this standard, as strict as this, is the submitted data purporting to showing conclusive, statistical relationship between asbestos consumption and a reported sharp rise in the incidence of mesothelioma. Several serious problems exist on this approach, namely: data is used from 1940 thru 1969--we can show documentation that the current belief in the relationship between this cancer and asbestos exposure was not medically accepted until 1960. Detection prior to 1960, as well as diagnosis, is highly suspect. There is very suggestive evidence that points to a radiation synergy with asbestos exposure. If true, then I'm sure a plot of mesothelioma cases against x-ray usage would show as good, if not better correlation.

Additionally, apparently no attempt was made to factor-in population mobility and relate incidence of mesothelioma to exposure elsewhere.

c) In defining sources of asbestos in ambient air, total neglect is given to natural contribution from regional source rocks disturbed by man's activity--road building, quarrying, agriculture, development, etc. We can show significant documentation attesting to high levels of asbestos coming from these sources.

d) Much discussion is given pertaining to analysis of asbestos in the procedure without once mentioning enormous variability in analytical precision and repeatability. We can show variabilities up to 1000 fold.

e) Proposal of both an emission and ambient standards on the basis of weight totally ignore the accepted, medically significant fiber size relationship to health effects.

f) Proposal's attempt to correlate fiber/unit volume to mass weight is contradictory to published research showing great discordance with this.

g) A proposed method (technique) for stack monitoring is given that admits it has never been tested. It does not meet minimum criteria for monitoring as stipulated by EPA.

h) Proposal refers to ambient air studies done between 1975-1977, which included MMD. Significant variability between used test method and and published EPA analytical techniques cast considerable doubt upon viability of data. MMD survey listed, but not named, in proposal shows one of seven sampling sites exceeding proposed ambient standard. No mention is made that the sample site is located halfway between MMD and the Chrysler-Dodge dealership on Oakland street - that does considerable brake relining. Also does not reflect comment pertaining to high levels of traffic on Oakland Street. Nor does it mention that during the sampling period, significant construction was underway in the industrial park at the end of Mill Street.

i) Preliminary calculations on our ability to meet the proposed 24 gram/day/property standard lead me to state compliance is not possible.

Case #1.

We measured (weighed) collected powder, over a 10-day period, (dust-asbestos) from the following bag collectors:

Collector	Ave. lbs/Day	CFM
725 - #15	161	11,000
735 - #8	1,438	7,000
745 - #14	1,200	7,000

By doing a mass balance calculation, we can predict emitted levels of asbestos. All three collectors are Micropulseair fabric filters, each guaranteed to be 99.99 percent efficient. (Manufacturer guarantees less than 0.001 grains per cubic foot.)

If we assume what we collect represents 99.99 percent of the total asbestos handled, then:

725 - #15:	161 lbs/day x 0.01% =	0.0161 lbs/day
735 - #8:	1,438 lbs/day x 0.01% =	0.1438 lbs/day.
745 - #14:	1,200 lbs/day x 0.01% =	0.1200 lbs/day
		0.2799 lbs/day approximately
Converting to grams:		127.07 gms/day

This represents three of seven collectors at MMD handling asbestos.

Going back to Micropulseair's 0.001 grain/ft^3 guarantee, we can quickly convert our previous figures and see where we stand.

725 - #15 = (0.0161 lbs/day ÷ 15,840,000 cu. ft./day) x 7000
= 0.000007 grains/cu. ft.

735 - #8 = (0.1438 lbs/day ÷ 10,080,000 cu. ft./day) x 7000
= 0.0001 grains/cu. ft.

745 - #45 = (0.1200 lbs./day ÷ 10,080,000 cu. ft./day) x 7000
= 0.00008 grains/cu. ft.

All above cases meet manufacturer's claim.

Case #2.

We have very limited emission monitoring data available; we do have some optical measuring data on the 735 - #8 bag collector.

735 - #8

7000 cfm
10,080,000 cf/d

0.05 f/cc = measured value

Using DEP's asumption that only 2% of all asbestos fibers are >5μ < 100μ with a 3:1 aspect ratio, we can project "total" asbestos fibers as follows:

0.05 f/cc ÷ 0.02 = 2.5 f/cc total

Now, if 1 mg = 1000 total asbestos

air flow is 10,080,000 cfd. Converting to m^3

10,080,000 x 0.02832 = 285,466 m^{3}d

2.50 f/cc x 10^6 cc/m^3 = 2.50 x 10^6 f/m^3

therefore, 2.50 x 10^6 f/m^3 x 285,466 m^3/d = 7.1367 x 10^{11} f/day.

If 1000 f weigh 1 x 10^{-9} grams, then

$$\frac{(7.1367 \times 10^{11})\ (1 \times 10^{-9}\ \text{grams})}{1000\ \text{f}} = 7.1367 \times 10^{-1}\ \text{grams}$$

= 0.714 grams/day

= 11.01 grains/day

11.01 grains/day x 10,080,000 ft^3 = .0000011 grains/ft^3

Comparing this Case #2 to Case #1 for the 735 - #8 collector:

0.0000011 grains/cu. ft. / 0.0001 grains/cu. ft.

There is a 100Q fold difference.

This tends to agree with an earlier comparison discussion on analytical techniques having approximately 1000 fold error.

It is my belief that our current baghouse collectors meet the state-of-the-art ability to remove particles. We can show very conclusive evidence of this in the form of EPA documentation. If this is the best, then we cannot accept the premise that the State's proposed emission standard is viable.

mlb