

FOIA MARKER

This is not a textual record. This is used as an administrative marker by the William J. Clinton Presidential Library Staff.

Collection/Record Group: Clinton Presidential Records
Subgroup/Office of Origin: Office of Science and Technology Policy
Series/Staff Member: Jerold Mande
Subseries:

OA/ID Number: 13036
FolderID:

Folder Title:
Tobacco: Polonium-210

Stack:	Row:	Section:	Shelf:	Position:
S	66	4	4	2

Will Pratt, Ph. D.

c/o G E O Specialty Chemicals
P. O. Box 190467
Little Rock, AR 72219-0467

Telephone 501-888-1211
800-453-ALUM
Fax 501-888-1148

September 9, 1997

President William Clinton
President of the United States
1600 Pennsylvania Avenue NW
Washington, D.C. 20500

Dear President Clinton:

There is a vast body of scientific information which demonstrates that cigarettes expose the average smoker to levels of radiation which exceed the allowable limits established by the US Government. The implications of this information are vast because :

- On the basis of the radiation exposure, cigarettes are illegal.
- And cigarette companies are in violation of federal statutes and as a consequence are acting negligently.

Exposure to radiation is regulated by the federal government for several reasons. These regulations are designed to limit exposure to radioactive materials

- Because exposure to radiation is known to cause cancer and death, and
- Because exposure to radiation is known to cause radiation induced birth defects in the offspring of those exposed.

The scientific basis for these conclusions are based on a wide array of the most scientifically reliable experts. Moreover, this information has been collected over more than thirty years and not a single report has changed the conclusions of these experts. The body of evidence is summarized below:

In 1964¹, and again in 1966², there were published reports jointly authored by the US Department of Agriculture and the US Atomic Energy Commission. These reports attempted to explain why scientists at the Harvard School of Public Health were reporting that tobacco contained the radioactive elements Polonium-210 and Lead-210. And, they reported that these highly radioactive elements are volatilized by the heat of the lighted cigarette and transferred to the lungs of those exposed to cigarette smoke.³ The Harvard scientists noted that Polonium-210 collects in localized areas of the lungs known as the segmental bifurcations and that these are the regions where bronchial carcinomas frequently arise. Consequently, they concluded, Polonium-210 may be an important factor in the initiation of bronchial carcinoma in man.⁴ Other scientists later concluded that alpha radiation from Polonium-210 in

President William Clinton
September 9, 1997
Page 2

insoluble smoke particles may be the primary agent of bronchial cancer in smokers.⁵

Tobacco companies have successfully challenged epidemiological studies that show a correlation between cigarette smoking and lung cancer. The basis of their arguments seem to be based more on legal than scientific concepts. Notwithstanding, there is no way they can refute the fact that cigarettes contain Polonium-210 and that the lungs of smokers are heavily exposed to alpha radiation.⁶ Polonium-210 is an EPA Class A Carcinogen. And, therefore cigarettes cause cancer and death.

These views were substantiated more recently by the National Council of Radiation Protection. This organization is chartered by Congress and is responsible for acting in the public interest regarding matters related to radiation exposure. In 1987, this group concluded that the average smoker is exposed to 13 units of radiation on an annual basis.⁷ Yet, the Environmental Protection Agency⁸ has established that the general public's exposure shall not exceed 1 unit per annum on a continuous basis and shall not exceed 5 units per annum on an intermittent basis. Thus, the average smoker is exposed to levels of radiation which exceed federal statutes.

Because cigarette companies have no way of regulating the use of their product, and because of the addictive nature of tobacco, it seems unlikely that there is a method for regulating smokers' exposure to radiation. In the absence of a solution to this dilemma, it seems that cigarette companies have a legal obligation to withdraw their products from the market immediately.

The recent incident where 25 million pounds of potentially defective beef were removed from the market by Hudson Foods underscores the obligations, both moral and legal, which obligate corporations to provide products which are free of health and safety defects. Although cigarettes are exempt from the scrutiny of governmental regulatory agencies like the Consumer Product Safety Commission, they are not exempt from statutes which regulate the public's exposure to radiation. In the absence of such an initiative on the part of the tobacco industry, the government has an obligation to compel the tobacco industry to abide by radiation exposure statutes. I am requesting that your office take swift action to protect the health and public safety of our citizens.

President William Clinton
September 9, 1997
Page 3

This issue has been overlooked and ignored for far too long. Polonium-210 is one of the most dangerous poisons known. Weight for weight it is 250 billion times as toxic as hydrogen cyanide (the gas used in gas chambers). I have spent two years pursuing this issue. The scientific evidence regarding the exposure to radiation caused by tobacco has been reviewed and confirmed by both radiobiologists and nuclear physicists.

Most of the recent activity taken against the tobacco industry has been focused on extracting billions of dollars from the tobacco industry; much of this largesse will go to benefit attorneys rather than to benefit those who have suffered the consequence extolled by the habitual use of cigarettes. When will we realize the true cost of tobacco use is denominated in lives and not in dollars? Is capitalism merely the triumph of consumption over compassion, and is it just the victory of profits at the expense of peoples lives? Certainly not. Litigation will never make cigarettes safe; and commerce in tobacco will continue to be a poor decision until common sense is outlawed.

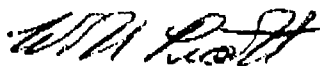
Law suits, regulations and taxes can never end our addiction to nicotine; science can. Resistance to correcting the problems caused by tobacco are overwhelming. There are many who support the status quo because the alternative (e.g. a black market for tobacco) would be no better than what we have now. These are people who are uninformed. Science now recognizes that addiction to nicotine is caused by an imbalance in the brain which occurs during the first few weeks that someone experiments with tobacco products. More importantly, this imbalance can be reversed. There is now a scientific approach to treating nicotine addiction. With the benefit of this technology it is now possible to unwind the intrusive imposition the tobacco industry has established in our society. Tobacco companies represent an inversion of values which robs people, their families and our communities of life and resources.

As a second term President, you have a unique opportunity to tread where others cannot. By taking action on this matter you can give society a gift that will long be remembered. We are standing at the threshold of the twenty first century. Our hundred year experiment with the cigarette will no doubt be remembered as a mistake of mass proportion. Please consider the millions of lives which could be improved, as well as the billions of dollars which could be better spent if this injustice were corrected. Lung cancer is more common in women than breast cancer; lung cancer is more common in men than both prostate and colon cancer combined. And, smoking is responsible for as much as eighty five percent of all lung cancers. By taking action on the tobacco issue, the number one cause of cancer could be eliminated. What other initiative could add such an immeasurable improvement to the quality of life and the status of national health care?

President William Clinton
September 9, 1997
Page 4

I have chosen to limit the circulation of this letter because of the rather sensitive nature of its content. Many thanks for your consideration regarding this matter. I look forward to hearing from you.

Respectfully,



Will Pratt, Ph. D.

cc: Mr. Al Gore; Vice President
Ms. Donna Shalala; Department of Health & Human Services
Ms. Carol Browner; Environmental Protection Agency
Ms. Janet Reno; Department of Justice

¹ T. C. Tso, N. A. Halden, and L. T. Alexander, "Radium-226 and Polonium-210 in Leaf Tobacco and Tobacco Soil," Science Vol. 146 (November 20, 1964): 1043-1045.

² T. C. Tso, Naomi Harley, and L. T. Alexander "Source of Lead-210 and Polonium-210 in Tobacco," Science Vol 153 (August 19, 1966) 880-882

³ Edward P. Radford, Jr., and Vilma R. Hunt, "Polonium-210: A Volatile Radioelement in Cigarettes," Science Vol. 143 (January 17, 1964): 247-249.

⁴ John B. Little, M.D., Edward P. Radford, Jr., M.D., H. Louis McCombs, M.D., and Vilma R. Hunt, B.D.S., "Distribution of Polonium-210 in Pulmonary Tissues of Cigarette Smokers," The New England Journal of Medicine Vol. 273, No. 25 (December 16, 1965): 1343-1351.

⁵ Edward A. Martell, "Radioactivity of Tobacco: Trichomes and Insoluble Cigarette Smoke Particles," Nature Vol. 249 (May 17, 1974): 215-217.

⁶ Dade W. Moeller, "An Opportunity To Be Seized," HPS Newsletter Vol. 22, No. 8 (August 1994).

⁷ Dade W. Moeller, Radiation Exposure of the U.S. Population from Consumer Products and Miscellaneous Sources (Bethesda, MD: The National Council of Radiation Protection, 1987) 65-66.

⁸ The Environmental Protection Agency Code of Federal Regulations, Section 191. See also: Charles B. Meinhold, Limitation of Exposure to Radiation (Bethesda, MD: The National Council of Radiation Protection, 1993) 54-55.



G E O
SPECIALTY CHEMICALS

P.O. Box 190467
Little Rock, AR 72219
9213 Arch Street Pike
Little Rock, AR 72206
501/888-1211
Fax 501/888-1148

Dr. Dietrich Hoffman
Amer Health Found
Valhalla, NY
914-592-2600
789-7163

FAX COVER SHEET

DATE: 12/16/97 TIME: _____

TO: Mr. Jerry Maude 208-456-6027

FROM: W. H. Pratt

NUMBER OF SHEETS: _____
(including cover sheet)

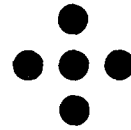
SUBJECT: _____

SPECIAL INSTRUCTIONS: _____

Thanks for your time today
I look forward to hearing from you

If all pages are not transmitted, please call (501) 888-1211.

FROM THE DESK OF
DIETRICH HOFFMANN



12-22-97.

Faxed 12-22-97 1⁰⁰ PM

D.H.



Mr. Jerry Mande
Office of Science and Technology
The White House
Washington DC 20500

December 22, 1997

FAX # 1-202-456-6025

Dear Mr. Mande:

We cannot seem to meet voice to voice on the telephone. Since I know that your question concerns polonium-210 in tobacco and tobacco smoke, I enclose a brief overview on the subject with appropriate literature citations. This is not an exhaustive review but it may serve as a start.

Sincerely,

Dietrich Hoffmann, Ph. H.
Associate Director

encl.

cc: Dr. E.L. Wynder, President AHF

DH:ih

[Two pages follow]



December 20, 1997

Polonium-210: Its Occurrence in Tobacco and Tobacco Smoke and Its Significance in Tobacco Carcinogenesis.

Dietrich Hoffmann, Ph.D.

American Health Foundation, Valhalla, NY 10595

Radon-222, a member of the decay chain of uranium-238, and radon-220, which is formed in the decay chain of thorium-232, are the two isotopes of this noble gas that are found in the human respiratory environment. The decay of radon-222 and radon-220 leads to the formation of lead-210 (^{210}Pb) which has a half life of 22.3 years and delivers polonium-210 (^{210}Po) which has a half life of 138 days.

Although tobacco and tobacco smoke contain also other radioactive elements (^{40}K , ^{226}Ra), 99 per cent of the α -radiation activity in tobacco products derive from ^{210}Po [1]. The major source for ^{210}Po in tobacco products are phosphate fertilizers [2]; a minor portion of ^{210}Po in the tobacco plant derives from airborne particles which contain ^{210}Po ; these particles are trapped in the trichomes on the underside of tobacco leaves (the side facing the soil) [3].

Reports on ^{210}Po content in tobacco samples from 24 countries show a range of 0.14-1.0 pCi ^{210}Po /g tobacco [4]; 13 samples of tobaccos from the USA and in the UK contained 0.28 ± 0.06 pCi ^{210}Po /g tobacco [5]. When smoked under standardized machine-smoking conditions of a 35-ml puff of 2 seconds duration taken once per minute [Federal Trade Commission method; 6], a nonfilter cigarette containing 0.411 pCi ^{210}Po emits 22.2% of the ^{210}Po into mainstream smoke (which is inhaled by the smoker); a filter cigarette, smoked under the same conditions, yields 15.1 % of the ^{210}Po as mainstream smoke constituent. Twenty-four percent of the ^{210}Po from tobacco appeared in the sidestream smoke (smoke generated during smoldering in puff intervals) of the nonfilter cigarette, while the sidestream smoke of the filter cigarette contained 32.9% of it. Recovery of ^{210}Po from the cigarette butt and ashes of the nonfilter and filter cigarette respectively made up 46.7% and 38.8%, while the filter tip of the latter had retained 13.7% [7].

The mean α -activity of ^{210}Po has been reported as being between 5.6 and 10 fCi/g in the lung parenchyma and between 4 and 4,500 fCi/g in the bronchial tissues of cigarette smokers; nonsmokers' lungs had levels of 1.6-3.4 fCi/g and 3.1-50 fCi/g, respectively [4].

Five American moist snuff brands had between 0.14 and 0.57 pCi ^{210}Po per gram and 0.22-0.37 pCi/g were found in three dry snuff brands [8]. Snuff induces cancer in the oral cavity of snuff dippers and the highest risk for such lesions is at the site where the snuff is placed [9]. However, it is indicated that such neoplasms are mainly due to the action of nicotine-derived *N*-nitrosamines [10].

Polonium-210 is a known lung carcinogen in uranium miners [11], however, its significance as an

inducer of cancer and especially of lung cancer, has been questioned [4]. In 1987, the US National Council on Radiation Protection and Measurement ascribed about 1% of the risk of lung cancer -- after 50 years of cigarette smoking -- to the role of ^{210}Po inhaled as a particulate phase constituent of cigarette smoke [12].

Literature Cited

- 1 Cohen BS, Eisenbud M, Harley, NH. Alpha radioactivity in cigarette smoke. *Radiation Res* 83:190-196, 1980.
- 2 Tso TC, Harley NH, Alexander LT. Source of lead-210 and polonium-210 in tobacco. *Science* 153:880-882, 1966
- 3 Martell EA. Radioactivity of tobacco trichomes and insoluble cigarette smoke particles *Nature* 249:215-217, 1974.
- 4 Harley N, Cohen BS, Tso TC. Polonium-210, a questionable new risk factor in smoking-related carcinogenesis. *Banbury Reports (Cold Spring Harbor)* 3:93-104, 1980.
- 5 Bogden JD, Kemp FW, Buse M, Thind IS, Luria DB, Forgacs J, Llanos G, Moncoya-Terrones I. Composition of tobaccos from countries with high and low incidences of lung cancer. I. Selenium, polonium-210, *Alternaria*, tar, and nicotine. *J Natl Cancer Inst* 66:27-31, 1981.
- 6 Pillsbury HC, Bright CC, O'Connor KJ, Irish FW Jr. Tar and nicotine in cigarette smoke. *J Assoc Offic Anal Chemists* 52:458-462. 1969.
- 7 Ferri ES, Baratta EJ. Polonium in tobacco products and human tissues. *Radiol Health Data Rpt.* 7:485-488, 1966.
- 8 Hoffmann D, Adams JH, Lisk D. Fisenne I, Brunneemann KD. Toxic and carcinogenic agents in dry and moist snuff. *J Natl Cancer Inst* 79:1281-1289, 1987.
- 9 Winn DM, Blot WJ, Shy M, Pickle LW, Toledo A, Fraumeni JC. Snuff dipping and oral cancer among women in the southern United States. *New Engl J Med* 304:745-749, 1981.
- 10 Hoffmann D, Djordjevic MV, Chemical composition and carcinogenicity of smokeless tobaccos. *Advan Dental Res* 11:322-329, 1997.
- 11 Saccomanno G. Archer VE, Saunders RP, James IA, Beeker PA. Lung cancer of uranium miners of the Colorado Plateau. *Health Phys* 10:1195-1201, 1964.
- 12 National Council on Radiation Protection and Measurement. Ionizing radiation exposure of the population of the United States. *Natl Council Radiation Prot Meas Rpt* 93, 1987; Bethesda MD.

1 Dana Road
Valhalla, New York 10595
Telephone: (914) 592-2600
Fax: (914) 592-6317
<http://www.ahf.org>
E-Mail: health@ahf.org

American Health Foundation

