

INTEROFFICE MEMORANDUM

BIO/BIO R&D - ENVIRONMENTAL TOBACCO SMOKE DIVISION

TO: Dr. C. R. Green

FROM: Dr. Guy B. Oldaker III

DATE: 29 December 1988

SUBJECT: 1988 Second-Half Report -- Real-Life Measures Group

ETS Exposure Data Base (Oldaker and McBride)

With assistance from Lorillard researchers, efforts were initiated to combine data sets from ETS surveys conducted in the U. S. into three data bases for offices, restaurants, and passenger cabins of commercial aircraft. Standard formats for the data were established as well as a convention for defining limit of detection. Statistical analyses were performed on the restaurant data base, which included results from surveys conducted in New York, NY, Winson-Salem, NC, Greensboro, NC, Dallas, TX, and Knoxville, TN. Results show nicotine being the best indicator of ETS, followed in order by ultraviolet particulate matter (UV-PM), and respirable suspended particles (RSP). In addition, mean nicotine concentrations were found not to differ significantly among the cities, a finding that may reflect similar smoking rates and building codes relating to ventilation. Results from these efforts were presented by Mr. W. E. Crouse of Lorillard at the APCA International Specialty Conference on Combustion Processes and the Quality of the Indoor Environment, which was held in Niagara Falls, NY in September. The title of the presentation was "Results from a Survey of Environmental Tobacco Smoke (ETS) in Restaurants"; authors from Lorillard included W. E. Crouse, M. S. Ireland, J. M. Johnson, R. M. Striegel, Jr., C. S. Williard, and R. M. DePinto, and from RJRT, G. B. Oldaker III and R. L. McBride. It is expected that the paper will be published in 1989 as part of the conference proceedings. (This same paper was presented at the 42nd TCRC in Lexington, KY.)

Survey of ETS in Ottawa, Ontario Offices (Oldaker)

The report titled "Results from a Survey of Environmental Tobacco Smoke in Offices in Ottawa, Ontario" was published in Environmental Technology Letters, 9, 501-508 (1988). Although this paper shows J. R. Carson and C. A. Erikson of International Technology Corporation as authors, it was first prepared internally as R&DM, 1988, No. 139.

ETS in Passenger Cabins of Commercial Aircraft:
"Piedmont" Survey Continued (Oldaker)

The communication titled "Comment on 'Estimation of Effect of Environmental Tobacco Smoke on Air Quality within Passenger Cabins of Commercial Aircraft,'" was published in Environmental Science & Technology, 10, 1238-1240 (1988). This communication responds to comments by Messrs. J. Repace and A. Lowrey who attempt to support their position regarding public health policy by extrapolating from nicotine data previously reported by RJRT to RSP concentrations that were not

measured.

Survey of ETS in Washington, DC Offices and Restaurants (Oldaker)

As Executive Director of the CIAR, Dr. Oldaker provided technical and administrative direction to W. E. Crouse of Lorillard, who was responsible for overseeing the CIAR sponsored survey of ETS in Washington, DC offices and restaurants. Efforts are in progress to combine these data into the ETS exposure data base.

Survey of ETS in New York City Offices and Restaurants (Conrad, Conner, Perfetti, McConnell, Ogden, and Oldaker)

The manuscript titled "Surveys of Environmental Tobacco Smoke in Restaurants and Offices in New York City" was prepared and submitted to Beitrag zur Tabakforschung for publication. Authors from RJRT include: G. B. Oldaker III; J. M. Conner; F. W. Conrad, Jr.; B. C. McConnell; M. W. Ogden; and P. F. Perfetti. Authors from Philip Morris and Lorillard include R. A. Fenner and W. E. Crouse, respectively.

Survey of ETS in Japan Air Lines (JAL) Aircraft (Oldaker, Stancill, Conrad, and Birdsong)

Results from the December 1987 survey of ETS in Japan Air Lines (JAL) aircraft were presented at the 42nd TCRC in Lexington, KY. The presentation was titled "Results from Survey of Environmental Tobacco Smoke in Passenger Cabins of B747 Aircraft"; authors included G. B. Oldaker III, M. W. Stancill, F. W. Conrad, Jr., and B. N. Birdsong of RJRT.

Survey of ETS in Scandinavian Airline System (SAS) Aircraft (Oldaker)

Technical assistance was provided to the CIAR in connection with the survey of ETS in passenger cabins Douglas aircraft owned and operated by SAS. Meetings were attended in Stockholm, Sweden and Delft, the Netherlands during which the survey protocol was defined and the technical tasks of TNO (the organization contracted to collect and analyze samples) were delineated. Dr. Oldaker served as one of the survey coordinators traveling with sampling teams on flights connecting Copenhagen with London, Vienna, and Zurich. Preliminary results received from TNO through the CIAR show ETS concentrations higher than those found by previous surveys of Boeing aircraft owned by Piedmont Airlines and Japan Air Lines. In addition, although data indicate that segregation is effective in reducing exposure to ETS in Business Classes, such is not indicated for Tourist Classes. Efforts are underway to conduct rigorous statistical analyses of these data and to formulate recommendations addressing the situation relative to ETS in the Tourist Class of service.

Assistance to Swedish National Manufacturers Association (Oldaker)

At the request of Mr. Rich Marcotullio, R. J. Reynolds Tobacco International, Dr. G. Oldaker traveled to Stockholm, Sweden and met with representatives of the

Swedish National Manufacturers Association. The purpose of the meeting was to establish an industry organization for addressing technical aspects of the ETS issue in Sweden. At the meeting an ETS committee was formed its mission being to ensure that members of the Swedish parliament are informed regarding the ETS issue. Dr. Oldaker agreed to draft a position paper addressing the smoking restriction issue in view of results from surveys of ETS exposure in offices, restaurants, and passenger cabins of commercial aircraft.

ETS in Passenger Cabins of Commercial Aircraft:
Department of Transportation Request for Proposals (Oldaker)

On 5 August the U. S. Department of Transportation (DOT) issued a request for proposals (RFP) to conduct investigations of air quality in passenger cabins of commercial aircraft. ETS is the focus of this research. The scope of work described in the RFP draws heavily from recommendations made by RJRT scientists based on experience from surveys performed in Piedmont Airlines and Japan Air Lines aircraft, thus indicating that efforts to inform the DOT were successful. At this writing, the contract has yet to be awarded.

Portable Air Sampling System
(McConnell, Oldaker, Walsh, and Stancill)

Patent No. 4,786,472 was awarded for the portable air sampling system (PASS) on 22 November. Inventors include B. C. McConnell, G. B. Oldaker III, and R. F. Walsh of RJRT.

After the manufacturer indicated that the pumps associated with the nicotine and particulate matter sampling systems of the PASS were to be discontinued, efforts to identify alternate, equivalent pumps were initiated. Newer model pumps are now specified for the PASS; results of performance tests show that the newer model pumps are equivalent to those they replace.

With the assistance of ARJAY Equipment Co., an advertisement for the PASS was prepared and published in the Journal of the Air Pollution Control Association.

European Legislators' Tour (Oldaker)

On 2 September 1988, two legislators with the EEC toured the ETS Division laboratory. The PASS was described and an overview of the RJRT program to assess exposure to ETS in public places was given.

Assistance to Center for Indoor Air Research, Inc. (Oldaker)

Dr. Oldaker served as Executive Director of the Center for Indoor Air Research until August 1988 and as Secretary/Treasurer until October 1988.

Presentation to the American Hotel and Motel Association (Oldaker)

At the request of Mr. T. Ogburn, Public Issues, Dr. Oldaker traveled to Lansing, Michigan in September and gave a presentation titled "How Much Smoke Is in the Air?" to leading delegates of the American Hotel and Motel Association.

C: RJRT \ 2NDHFRPT. 1

ETS Exposure Data Base (Oldaker and McBride)

With the assistance of researchers at Lorillard, efforts were initiated to combine all data sets from surveys of ETS into data bases for the three environmental categories surveyed, namely, offices, restaurants, and passenger cabins of commercial aircraft. Standard formats for the data were established as well as a convention for defining the limit of detection. The data base for the restaurant environmental category was prepared for surveys conducted in the U. S. including New York, NY, Winston-Salem, NC, Greensboro, NC, Dallas, TX, and Knoxville, TN, and statistical analyses on these data were performed. Results show that nicotine is the best indicator of ETS, followed in order by ultraviolet particulate matter (UV-PM), and respirable suspended particles (RSP). In addition, mean nicotine concentrations do not differ significantly among the cities a finding which may be attributed to fairly consistent smoking rates and standards for ventilations. Results from these preliminary efforts were presented by Mr. W. E. Crouse of Lorillard at the APCA International Specialty Conference on Combustion Processes and the Quality of the Indoor Environment held in Niagara Falls, NY in September. The title of the paper was "Results from a Survey of Environmental Tobacco Smoke (ETS) in restaurants"; authors included W. E. Crouse, M. S. Ireland, J. M. Johnson, R. M. Srtiegal, Jr., C. S. Williard, and R. M. DePinto of Lorillard and G. B. Oldaker III and R. L. McBride of RJRT. It is expected that the paper will be published with the conference proceedings in 1989. (This same paper was presented at the 41st TCRC in Lexington.)

Survey of ETS in Ottawa, Ontario Offices (Oldaker)

The report titled "Results from a Survey of Environmental Tobacco Smoke in Offices in Ottawa, Ontario" was published in Environmental Technology Letters, 9, 501-508 (1988). This paper shows J. R. Carson and C. A. Erikson of International Technology Corporation as authors. This report was prepared internally as R&DM, 1988, No. 139.

ETS in Passenger Cabins of Commercial Aircraft: "Piedmont" Survey Continued (Oldaker)

The communication titled "Comment on 'Estimation of Effect of Environmental Tobacco Smoke on Air Quality within Passenger Cabins of Commercial Aircraft,'" was published in Environmental Science & Technology, 10, 1238-1240 (1988). This communication responded to comments made by J. Repace and A. Lowrey who attempted to support their position regarding public health policy by extrapolating from previously reported nicotine data to unmeasured RSP data.

Survey of ETS in Washington, DC Offices and Restaurants (Oldaker)

As Executive Director of the CIAR, Dr. Oldaker provided technical and administrative direction to W. E. Crouse of Lorillard who was responsible for overseeing the CIAR sponsored survey of ETS in Washington, DC offices and restaurants. Efforts are in progress to combine these data into the ETS exposure data base.

Survey of ETS in New York City Offices and Restaurants
(Conrad, Conner, Perfetti, McConnell, Ogden, and Oldaker)

The manuscript titled "Surveys of Environmental Tobacco Smoke in Restaurant s and Offieds in New York City" was prepared and submitted to Beitrag zur Tabakforschung for publication. Authors from RJRT include G. B. Oldaker III; J. M. Conner; F. W. Conrad, Jr.; B. C. McConnell; M. W. Ogden; and P. F. Perfetti; and from Philip Morris and Lorillard, R. A. fenner and WE. E. Crouse, respectively. This manuscript describes work done in September 1986 in association with Philip Morris and Lorillard.

Survey of ETS in Japan Air Lines Aircraft
(Oldaker, Stancill, Conrad, and Collie)

REsults from the December 1987 survey of ETS in Japan Air Lines (JAL) aircraft were presented at the 41st TCRC in Lexington, KY. The presentation was titled "Results from Survey of Environmental Tobacco Smoke in Passenge Cabins of B747 Aircraft" authors included G. B. Oldaker III, M. W. Stancill, F. W. Conrad, Jr, and B. N. Birdsong of RJRT, R. A. Fenner, J. O. Iephardt, P. G. Baker, J. Lyons-Hart, and M. E. Parrish of Philip Morris. The manuscript addressing the survey was received from Environmental Science & Technology and is currently being revised in oeder to repond to comments.

Survey of ETS in Scandinavian Airline System (SAS) Aircraft
(Oldaker)

Technical assistance was provided to the CIAR in connection with the survey of ETS in passengeec cabins of SAS aircraft. Meetings wree attended in Stockholm, Swededn and Delft, the Netherlands during which the survey protocol was defined and the technical tasks of TNO, the organization contracted to collect and analyze samples, were delineated. Dr. Oldaker served as one of the survey cooridcnators during the Aust sampling and travelled as the fifth member of the sampling team on flight cconnecting Cpoenhage, denmark with London, Vienna, and Zurich. Preliminary results received from TNO through the CIAR show ETS concentratoins higher than those measured in previous surveys inv;loving Boeing aircraft owndeed by Piedmont Airlines and Japan Air Lines. In addition, although data indicate that segregation is effective in reducing exposure to ETS in the Business Classes, such is not indicated for Tourist Classes. Efforts are underway to condusct rigorous statistical analyses of these data and to formulate recommendations addressing the situation relative to the Tourist Class of service.

Assistance to Swedish National Manufacturers association (Oldaker)

ETS Exposure Data Base (Oldaker and McBride)

With the assistance of researchers at Lorillard, efforts were initiated to combine all data sets from surveys of ETS into data bases for the three environmental categories surveyed, namely, offices, restaurants, and passenger cabins of commercial aircraft. Standard formats for the data were established as well as a convention for defining the limit of detection. The data base for the restaurant environmental category was prepared for surveys conducted in the U. S. including New York, NY, Winston-Salem, NC, Greensboro, NC, Dallas, TX, and Knoxville, TN, and statistical analyses on these data were performed. Results show that nicotine is the best indicator of ETS, followed in order by ultraviolet particulate matter (UV-PM), and respirable suspended particles (RSP). In addition, mean nicotine concentrations do not differ significantly among the cities a finding which may be attributed to fairly consistent smoking rates and standards for ventilations. Results from these preliminary efforts were presented by Mr. W. E. Crouse of Lorillard at the APCA International Specialty Conference on Combustion Processes and the Quality of the Indoor Environment held in Niagara Falls, NY in September. The title of the paper was "Results from a Survey of Environmental Tobacco Smoke (ETS) in restaurants"; authors included W. E. Crouse, M. S. Ireland, J. M. Johnson, R. M. Srtiegal, Jr., C. S. Williard, and R. M. DePinto of Lorillard and G. B. Oldaker III and R. L. McBride of RJRT. It is expected that the paper will be published with the conference proceedings in 1989. (This same paper was presented at the 41st TCRC in Lexington.)

Survey of ETS in Ottawa, Ontario Offices (Oldaker)

The report titled "Results from a Survey of Environmental Tobacco Smoke in Offices in Ottawa, Ontario" was published in Environmental Technology Letters, 9, 501-508 (1988). This paper shows J. R. Carson and C. A. Erikson of International Technology Corporation as authors. This report was prepared internally as R&DM, 1988, No. 139.

ETS in Passenger Cabins of Commercial Aircraft: "Piedmont" Survey Continued (Oldaker)

The communication titled "Comment on 'Estimation of Effect of Environmental Tobacco Smoke on Air Quality within Passenger Cabins of Commercial Aircraft,'" was published in Environmental Science & Technology, 10, 1238-1240 (1988). This communication responded to comments made by J. Repace and A. Lowrey who attempted to support their position regarding public health policy by extrapolating from previously reported nicotine data to unmeasured RSP data.

Survey of ETS in Washington, DC Offices and Restaurants (Oldaker)

As Executive Director of the CIAR, Dr. Oldaker provided technical and administrative direction to W. E. Crouse of Lorillard who was responsible for overseeing the CIAR sponsored survey of ETS in Washington, DC offices and restaurants. Efforts are in progress to combine these data into the ETS exposure data base.

Survey of ETS in New York City Offices and Restaurants
(Conrad, Conner, Perfetti, McConnell, Ogden, and Oldaker)

The manuscript titled "Surveys of Environmental Tobacco Smoke in Restaurants and Offices in New York City" was prepared and submitted to Beitrag zur Tabakforschung for publication. Authors from RJRT include G. B. Oldaker III; J. M. Conner; F. W. Conrad, Jr.; B. C. McConnell; M. W. Ogden; and P. F. Perfetti; and from Philip Morris and Lorillard, R. A. Fenner and W. E. Crouse, respectively. This manuscript describes work done in September 1986 in association with Philip Morris and Lorillard.