



DOW CHEMICAL U.S.A.

October 6, 1988

MICHIGAN DIVISION
MIDLAND, MICHIGAN 48667

John G. Gleeson, Esquire
HARVEY, KRUSE, WESTEN & MILAN, PC
1590 First National Building
Detroit, MI 48226

RE: REZMER V. KEENE CORPORATION, ET AL.
CASE NO 87-CV-74690-DT

Dear Mr. Gleeson:

The following information is in response to your subpoenas in the above-referenced case and the hearing which was held on September 8, 1988.

With respect to subpart b of Schedule A:

- Property Accounting keeps job folders for ten years. There are currently about 18,000 job folders on file. Each folder, which is filed by job number, contains a varying number of pages (authorizations, purchase orders, etc.). Those files are not searchable by "asbestos"; a manual search would be required.
- Environmental Services has records regarding asbestos disposal going back to about 1976. Those documents are in the process of being collected.
- The Engineering Department maintains its job folders for existing buildings on aperture cards. There are over 200,000 aperture cards, containing up to eight records per card. Those cards are kept for the life of a building.
- Maintenance records, which would include demolition, are kept for current year plus three years. The Purchasing Department keeps purchase orders for current year plus four years.
- The Traffic Department has no records pertaining to transportation of asbestos.

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AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY

Quality
Performance
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With respect to subpart c of Schedule A:

- As I mentioned during our October 6th morning telephone conversation, Fred Sabel of Industrial Hygiene (1976 to current) and Phil Watanabe of Toxicology (1982 to current) are the most knowledgeable current employees. Their resumes are attached.
- As you know per your witness list, prior toxicologists were:

Don Irish (deceased)	1934-1954
V. K. Rowe (retired)	1954-1973
Perry J. Gehring (Dow)	1973-1978
Bernard A. Schwitz (quit)	1978-1982

- The most knowledgeable industrial hygienist prior to 1976 would probably be retiree Harold R. Hoyle. Mr. Hoyle was employed as an industrial hygienist from 1947-1976. His address is: 1360 Coronado Terrace, Deltona, Florida 31725.
- With respect to Dow's knowledge, the toxicology labs have done five studies involving asbestos:

Results Of Range Finding Skin Contact Irritation
Tests On Asbestos 7M, 4/24/58

Rat And Hamster Intratracheal And Intraperitoneal
Injection Studies On Titanium Phosphate And
Asbestos, 4/17/72

Toxicology of Ingested Asbestos Literature Survey,
10/23/74

Effects From Chronic Inhalation Of Asbestos
Pipe-Covering Dust In Rats And Hamsters, 5/11/76

Measurement Of The Degree Of Hemolysis Caused By
Coated And Uncoated Asbestos Fibers, 5/2/77

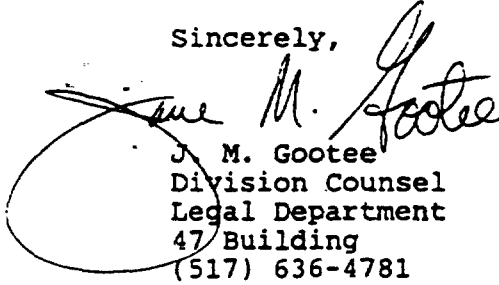
Those reports are "Restricted For Use Within The Dow
Chemical Company Only."

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With respect to subpart e of Schedule A, I had planned to draft an affidavit today. However, my time was spent preparing for tomorrow's hearing.

Sincerely,


J. M. Gootee
Division Counsel
Legal Department
47 Building
(517) 636-4781

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FRED LIVINGSTONE SABEL
INDUSTRIAL HYGIENE ASSOCIATE

Home Address: 3907 McKeith Street, Midland, Michigan
Home Telephone: (517) 631-7439
Birthdate: November 19, 1934
Birthplace: Shanghai, China
Married: 1978, Kathy Lyons
Children: Kimberly Grace, Matthew Allen
Education: 1961, B.S./B.A., Microbiology
University of Maryland
College Park, Maryland
Employment: The Dow Chemical Company (1966-Present)
1966-69, FP&S - Enviromental Bio-Engineering,
Zionsville, Indiana
1969-70, FP&S - Lunar Receiving Laboratory,
Houston, Texas
1970-72, FP&S - NCI, Washington, D.C.
1972-76, FP&S - Bio-Engineering Services,
Rockville, Maryland
1976-79, - Industrial Hygiene Laboratory,
Midland, Michigan
1979-Present, - Industrial Hygiene Services
Michigan Division
Professional Certification: 1979, Certified in the Comprehensive Practice of
Industrial Hygiene by the American Board
of Industrial Hygiene, Certificate #1723
Professional Memberships: American Industrial Hygiene Association
American Academy of Industrial Hygiene
Publications/
Patents: Attached

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CURRICULUM VITAE
PHILIP GLEN WATANABE

BIRTHDATE: 23 March 1947

BIRTHPLACE: Inglewood, California, USA

MARITAL STATUS: Angela Irene (Loh) Watanabe, 1969

CHILDREN: Sandra, 1973; Julie, 1976; Paul, 1980

EDUCATION: 1965 - Lennox High School, Inglewood, CA

1969 - B.S. Biological Sciences, Univ. of California,
Irvine Campus, Irvine, CA

1969-1973 - Research Assistant, Toxicology
Curriculum, Utah State University

1974 - Ph.D., Toxicology, Utah State University,
Logan, Utah
Thesis: Studies on the Effects of Tri-*o*-Tolyl
Phosphate (TOTP) in the Chicken

EMPLOYMENT: 1974 - Postdoctoral Fellow
Pharmacokinetics/Metabolism Section, Toxicology
Research Laboratory, Health and Environmental
Research, Dow Chemical U.S.A.

1975 - Present - Toxicology Research Laboratory,
Health and Environmental Sciences, Dow
Chemical U.S.A. - Molecular Toxicology Unit
(Group Leader); Reproductive/Acute Toxicology
Unit (Associate Scientist - 1981)(Laboratory Director
- 1982)

JOB DESCRIPTION: Director of the Mammalian and Environmental
Toxicology Research Laboratory (METRL). The
primary responsibility is to direct the METRL to
provide a sound scientific base for decisions to be
made on aspects of human health and the
environment as they relate to Dow Business.

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PUBLICATIONS:

See attached

MEMBERSHIPS & HONORS:

Society of Sigma Xi
American Association for the Advancement of
Sciences (AAAS)
Society of Toxicology
International Society for Biochemical
Pharmacology
Member, NAS-NRC Committee on Toxicology
(1977-1979)(1979-1982)
Recipient of the Frank R. Blood Award of the
Society of Toxicology, March, 1978
Nonresident Lecturer, University of Michigan,
School of Public Health (1979-1980; 1980-1981)
Recipient of the Achievement Award of the Society
of Toxicology, March, 1980
Recipient of Midland Chapter Sigma Xi Award,
May 1980
Editorial Board, Toxicology & Applied
Pharmacology (1980-1984)
Co-Editor, Fundamental & Applied Toxicology
(1980-1983)
Diplomate, American Board of Toxicology (1980)
Associate Editor, Fundamental & Applied
Toxicology (1984-1986)

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9/22/88

PUBLICATIONS

1. Watanabe, P. G. and Sharma, R. P., Inhibition of subcellular cholinesterases by 2-carbomethoxy-1-methylvinyl dimethyl phosphate (mevinphos) in vitro and in vivo. Toxicol. Appl. Pharmacol., 23, 692-700, 1972.
2. Watanabe, P. G. and Sharman, R. P., Persistence of tri-*o*-tolyl phosphate (TOTP) and metabolites in chicken tissues as related to neurotoxicity. Pesticides and the Environment, p. 503-512, Intercontinental Medical Book Corp., New York, NY, 1973.
3. Sharma, R. P., Watanabe, P. G., Time related disposition of tri-*o*-tolyl phosphate (TOTP) and metabolites in chicken. Pharmacological Res. Comm. 6(5), 475-484, 1974.
4. Hefner, R. E., Watanabe, P. G., and Gehring, P. J., Preliminary studies of the fate of inhaled vinyl chloride monomer (VCM) in rats. Ann. N.Y. Acad. Sci., 246, 135-148, 1975.
5. Hefner, R. E., Watanabe, P. G. and Gehring, P. J., Preliminary studies of the fate of inhaled vinyl chloride monomer (VCM) in rats. Environ. Hlth. Persp. 11, 85-85, 1975.
6. Watanabe, P. G. and Sharma, R. P., Neurotoxicity of organophosphates: Effects of tri-*o*-tolyl phosphate (TOTP) in chicken ganglia cell cultures. J. Comp. Path., 85, 373, 1975.
7. Watanabe, P. G. and Sharma, R. P., Lymphatic tissue response in chickens treated with tri-*o*-tolyl phosphate (TOTP). J. Toxicol. Environ. Hlth., 1, 777-86, 1976.
8. Hefner, R. E. Jr., Watanabe, P. G. and Gehring, P. J., Percutaneous absorption of vinyl chloride. 1975. Toxicol. Appl. Pharmacol., 34, 529-532 (1975).
9. Wagner, E. R., Muelder, W. W., Watanabe, P. G., Hefner, R. E. Jr., Braun, W. W., and Gehring, P. J., A gas chromatographic method for the preparation of ¹⁴C-labeled vinyl chloride. J. Labeled Compounds, 11, 535-542, 1975.
10. Watanabe, P. G., McGowan, G. R. and Gehring, P. J., Fate of ¹⁴C-vinyl chloride after single oral administration in rats. Toxicol. Appl. Pharmacol., 36, 339-352, 1976.

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11. Watanabe, P. G., Hefner, R. E. Jr., McGowan, G. R. and Gehring, P. J., Metabolism of vinyl chloride (Part of a collection, vinyl chloride associated liver disease), Ann. Int. Med., **84**, 717-731, 1976.
12. Watanabe, P. G., McGowan, G. R., Madrid, E. O., and Gehring, P. J., Fate of ¹⁴C-vinyl chloride following inhalation exposure in rats. Toxicol. Appl. Pharmacol., **37**, 49-59.
13. Watanabe, P. G., Hefner, R. E. Jr., and Gehring, P. J., Vinyl chloride induced depression of hepatic nonprotein sulfhydryl content and effects of sulfobromophthalein (BSP) in rats, Toxicology, **6**, 1-8, 1976.
14. Watanabe, P. G. and Gehring, P. J. The dose dependent fate of vinyl chloride and its possible relationship to oncogenicity in rats. Environ. Hlth. Persp., **17**, 145-152 (1976).
15. Gehring, P. J., Watanabe, P. G. and Blau, G. E., Pharmacokinetic studies in evaluation of the toxicological and environmental hazard of chemicals. In Advances in Modern Toxicology, Mehlman, M. (ed.), Hemisphere Publishing Corp., Washington, D. C., 1976.
16. Watanabe, P. G., Young, J. D. and Gehring, P. J., The importance of non-linear (dose-dependent) pharmacokinetics in hazard assessment. J. Environ. Path. Toxicol. **1**(2), 147-159 (1977).
17. Watanabe, P. G. and Sharma, R. P. Tri-*o*-tolyl phosphate neurotoxicity: Lack of evidence for autoimmunologic involvement. Arch. Environ. Cont. Toxicol. **6**, 233-240 (1977).
18. McKenna, M. J., Watanabe, P. G. and Gehring, P. J., The pharmacokinetics of vinylidene chloride in the rat. Environ. Hlth. Persp., **21**, 99-105 (1977).
19. Gehring, P. J., Watanabe, P. G., and Young, J. D., The relevance of dose dependent pharmacokinetics in the assessment of carcinogenic hazard of chemicals. In Origins of Human Cancer: Book A., Incidence of Cancer in Humans, Ed. H. H. Hiatt, J. D. Watson, J. A. Winsten, pp. 187-204, Cold Springs Harbor Laboratory, 1977.
20. Watanabe, P. G., McKenna, M. J., and Gehring, P. J., Chemobiokinetic perspectives on mechanisms of chemical carcinogenesis. Industrial Toxicology, Elsevier Publishing Co. (In Press).

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21. Gehring, P. J., Watanabe, P. G., and Park, C. N., Resolution of dose-response toxicity data for chemicals requiring metabolic activation: Example -- vinyl chloride. Toxicol. Appl. Pharmacol. 44, 581-591, 1978.
22. Watanabe, P. G., Zempel, J. A., Pegg, D. G., and Gehring, P. J., Hepatic macromolecular binding following exposure to vinyl chloride. Toxicol. Appl. Pharmacol. 44, 571-579, 1978
23. Watanabe, P. G., Zempel, J. A., and Gehring, P. J., Comparison of the fate of vinyl chloride following single and repeated exposure in rats. Toxicol. Appl. Pharmacol. 44, 391-399, 1978.
24. Dill, D. C., Watanabe, P. G., and Norris, J. M., Effect of methylene chloride on the oxyhemoglobin dissociation curve of rat and human blood. Toxicol. Appl. Pharmacol. 46, 125-129, 1978.
25. Watanabe, P. G. and Sharma, R. P., Neurotoxic organophosphates: Immunologic studies involving tri-*o*-tolyl phosphate. In Immunologic Considerations in Toxicology, Vol II. pg. 93-108, CRC, Ed. R. P. Sharma, 1981.
26. Guengerich, F. P. and Watanabe, P. G., Metabolism of ¹⁴C and ²⁶Cl labeled vinyl chloride in vivo and in vitro. Biochem. Pharmacol. 28, 589-596, 1979.
27. Pegg, D. G., Zempel, J. A., Braun, W. H., and Watanabe, P. G., Disposition of (¹⁴C) tetrachloroethylene following oral and inhalation exposure in rats. Toxicol. Appl. Pharmacol. 51, 465-474, 1979.
28. Guengerich, F. P., Crawford, W.M. Jr., and Watanabe, P. G., Activation of vinyl chloride to covalently bound metabolites: Roles of 2-chloroethylene oxide and 2-chloroacetaldehyde. Biochemistry 18, 5177-5182, 1979.
29. Watanabe, P. G., Reitz, R. H., Schumann, A. M., McKenna, M. J., Quast, J. F., and Gehring, P. J., Implications of the mechanisms of tumorigenicity for risk assessment. In The Scientific Basis of Toxicity Assessment, Ed. H. R. Witschi, Elsevier/North Holland Biomedical Press, Amsterdam, The Netherlands, 1979.
30. Reitz, R. H., Quast, J. F., Watanabe, P. G. and Gehring, P. J., Chemical carcinogens: Estimating the risk. Science 205, 1205-1208, 1979.

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31. Gehring, P.J., Watanabe, P. G. and Blau, G. E., Risk assessment of environmental carcinogens utilizing pharmacokinetic parameters, Ann. N.Y. Acad. Sci., 329, 137-152, 1979..
32. Reitz, R. H., Watanabe, P. G., McKenna, M. J., Quast, J. F., and Gehring, P. J. Effects of vinylidene chloride on DNA synthesis and DNA repair in the rat and mouse: A comparative study with dimethylnitrosamine. Toxicol. Appl. Pharmacol. 52, 357-370, 1980.
33. Watanabe, P. G., Ramsey, J. C. and Gehring, P. J. Pharmacokinetics and metabolism of industrial chemicals. In Progress in Drug Metabolism, Vol. 5, Ed. J. W. Bridges and L. F. Chasseaud, John Wiley and Sons, Ltd., New York, 1980.
34. Guengerich, F. P., Crawford, W. W. Jr., Domoradzki, J. Y., McDonald, T. L. and Watanabe, P. G. In vitro activation of 1,2-dichloroethane by microsomal and cytosolic enzymes. Toxicol. Appl. Pharmacol. 55(2), 303-317, 1980.
35. Schumann, A. M., Quast, J. F. and Watanabe, P. G. The pharmacokinetics and macromolecular interactions of perchloroethylene in mice and rats as related to oncogenicity. Toxicol. Appl. Pharmacol. 55(2), 207-219, 1980.
36. Stott, W. T. and Watanabe, P. G. Kinetic interaction of chemical mutagens with mouse sperm in vivo as it relates to animal mutagenic effects. Toxicol. Appl. Pharmacol. 55(3), 411-416, 1980.
37. Reitz, R. H., Fox, T. R., Domoradzki, J. Y., Quast, J. F., Langvardt, P. W. and Watanabe, P. G. Pharmacokinetics of ethylene dichloride in rats treated by different routes and its long-term inhalatory toxicity. Ethylene Dichloride: Economic Importance and Potential Health Risks. Banbury Report #5, L. A. Moran and J. G. Cuddihy (Ed.), Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, 1980.
38. Reitz, R. H., Quast, J. F., Schumann, A. M., Watanabe, P. G. and Gehring, P. J. Nonlinear pharmacokinetic parameters need to be considered in high dose/low dose extrapolation. In Quantitative Aspects of Risk Assessment in Chemical Carcinogenesis, Arch. Toxicol. Suppl. 3, Springer-Verlag, 1980.

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39. Reitz, R. H., Quast, J. F., Stott, W. T., Watanabe, P. G. and Gehring, P. J. Pharmacokinetics and Macromolecular Effects of Chloroform in Rats and Mice: Implications for Carcinogenic Risk Estimation. Water Chlorination: Environmental Impact and Health Effects (Vol III). R. L. Jolley, W. A. Brunge, R. B. Cumming (Ed.), Ann Arbor Press, Ann Arbor, MI, 1980.
40. Schumann, A. M., Watanabe, P. G. and Gehring, P. J. The Importance of Pharmacokinetic and Macromolecular Events as They Relate to Mechanisms of Tumorigenicity and Risk Assessment. Target Organ Toxicity: Liver. R. L. Dixon, W. R. Hewitt (Ed.) Raven Press, NY, 1980.
41. Guengerich, F. P., Crawford, W. M. Jr., Mason, P. S., Mitchell, M. B. and Watanabe, P. G. Covalent binding of vinyl chloride metabolites in vitro: Roles of cytochrome P-450, epoxide hydratase, and alcohol dehydrogenase. Microsomes, Drug Oxidations, and Chemical Carcinogens, pp. 1211-1214, Academic Press, Inc., 1980.
42. Stott, W. T., and Watanabe, P. G. Risk assessment of exposure to vinyl exposure. Pure Appl. Chem. **53**, 593-595, 1981.
43. Guengerich, F. P., Mason, P. S., Stott, W. T., Fox, T. R. and Watanabe, P. G. Roles of 2-haloethylene oxides and 2-haloacetaldehydes derived from vinyl bromides and vinyl chloride in irreversible binding to protein and DNA. Cancer Research **41**, 4391-4398, 1981.
44. Stott, W. T. and Watanabe, P. G. Differentiation of the mechanisms of oncogenicity of 1,4-dioxane and 1,3-hexachlorobutadiene in the rat. Toxicol. Appl. Pharmacol. **60**, 287-300, 1981.
45. Stott, W. T., Reitz, R. H., Schumann, A. M., and Watanabe, P. G. Genetic and nongenetic events in neoplasia. Fd. Cosmet. Toxicol. **19**, 567-576, 1981.
46. Schumann, A. M., Fox, T. R. and Watanabe, P. G. A comparison of the fate of inhaled methyl chloroform (1,1,1-trichloroethane) following single or repeated exposure in rats and mice. Fund. Appl. Toxicol. (In Press, 1982).
47. Schumann, A. M., Fox, T. R. and Watanabe, P. G. ¹⁴C-Methyl chloroform (1,1,1-trichloroethane): Pharmacokinetics in rats and mice following inhalation exposure. Toxicol. Appl. Pharmacol. **62**, 390-401, 1982.

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48. Reitz, R. H., Fox, T. R., Ramsey, J. C., Langvardt, P. W., and Watanabe, P. G. Pharmacokinetics and Macromolecular Interactions of Ethylenè Dichloride in Rats After Inhalation or Gavage. Toxicol. Appl. Pharmacol. **62**, 190-204, 1982.
49. Stott, W. T., Quast, J. F. and Watanabe, P. G. The pharmacokinetic and macromolecular interactions of trichloroethylene in mice and rats. Toxicol. Appl. Pharmacol. **62**, 137-151, 1982.
50. Stott, W. T. and Watanabe, P. G. Differentiation of genetic versus epigenetic mechanisms of toxicity and its application to risk assessment. Drug Metabolism Rev. **13**(5), 853-873, 1982.
51. Koller, L. D., Exon, J. H., Moore, S. A., and Watanabe, P. G. Evaluation of ELISA for detecting in vivo chemical immunomodulation. Toxicol. Environ. Hlth. **11**, 15-22, 1983.
52. Reitz, R. H., Fox, T. R., Quast, J. F., Hermann, E. A., and Watanabe, P. G. (1983). Molecular mechanisms involved in the toxicity of sodium orthophenylphenol and its sodium salt. Chem. Biol. Interactions, **48**, 99-119.
53. Reitz, R. H. and Watanabe, P. G. (1983). Importance of non-genetic mechanisms in carcinogenicity. In: Developments in the Science and Practice of Toxicology, A. W. Hayes, R. C. Schnell, and T. S. Miya, Eds., Elsevier Science Publishers, B. V., pp 163-171
54. Reitz, R. H., Schumann, A. M., Watanabe, P. G. and Gehring, P. J. Genetic versus nongenetic chemical carcinogenesis and risk assessment, Genetic Toxicol., pg 425-438, Eds. R. A. Fleck and A. Hollander, Plenum Publ. Corp., 1982.
55. Dietz, F. K., Reitz, R. H., Watanabe, P. G. and Gehring, P. J. Translation of pharmacokinetic/biochemical data into risk assessment, Biological Reactive Intermediates-II, Part B, pg 1399-1424, Ed. Snyder, Park, Kocsis, Jollow Gibson and Witmer, Plenum Publ. Corp., 1982.
56. Rao, K. S., Watanabe, P. G. and Gehring, P. J. Role of animal toxicology and pharmacokinetic data in the safety evaluation of chemicals. Patty's Industrial Hygiene and Toxicology, Ed. Clayton and Clayton, John Wiley and Sons, In Press.

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57. Reitz, R. H., Fox, T. R., Quast, J. F., Hermann, E. A. and Watanabe, P. G., Biochemical factors involved in the effects of orthophenylphenol (OPP) and sodium orthophenylphenol (SOPP) on the urinary tract of male F344 rats. Toxicol. Appl. Pharmacol., 73, 345-349, 1984.
58. Slesinski, R. S., Guzzie, P. J., Hengler, W. C., Watanabe, P. G., Woodside, M. D. and Yang, R.S.H. Assessment of genotoxic potential of ethylenediamine: in vitro and in vivo studies. Mut. Res., 124, 299-314, 1983.
59. Fox, T. R. and Watanabe, P. G. The Detection of a Cellular Oncogene in Spontaneous Liver Tumors of the B6C3F1 Mouse. Science, 288, 596-597, 1985.
60. Gollapudi, B. B., Bruce, R. J., Linscombe, V. A., Watanabe, P. G. and Sinha, A. K. Effect of food and water deprivation of the parameters of the mouse bone marrow micronucleus test. Mutation Research, 173, 121-125, 1986.
61. Fox, T. R., Schumann, A. M. and Watanabe, P. G. Activation of a cellular proto-oncogene in spontaneous liver tumor tissue of the B6C3F1 mouse. Arch. Toxicol. Suppl. 10, 217-227, 1987.
62. Fox, T. R., Reitz, R. H., Schumann, A. M., Andersen, M. E., Watanabe, P. G. Research strategy in Industrial Toxicology. Proceedings of Satellite Symposium on Toxicity Testing of Industrial Chemicals. 223-233, July, 1986.
63. Reitz, R. H., Schumann, A. M., Watanabe, P. G. Mechanistic Considerations in Carcinogenic Risk Estimation. Societe Francaise de Toxicologie, Toulouse, France, April, 1987.
64. Sinha, A. K., Linscombe, V. A., Gollapudi, B. B., Zempel, J. A., and Watanabe, P. G. Assessment of Cell Cycle Duration of the Incidence of Sister Chromatid Exchanges in Somatic and Spermatogonial Cells of the Rat. Cancer Research, July, 1988.

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ABSTRACTS AND/OR PRESENTATIONS

1. Sharma, R. P. and Watanabe, P. G. Metabolism and elimination of tri-*o*-tolyl phosphate (TOTP), a neurotoxic organophosphate in chicken. Presented at the 12th Annual Meeting of the Society of Toxicology, March 18-22, 1973, New York, NY.
2. Watanabe, P. G. and Sharma, R. P. Persistence of tri-*o*-tolyl phosphate (TOTP) and metabolites in chicken tissues as related to neurotoxicity. Eighth Inter-American Conference on Toxicology and Occupational Medicine, August, 1973.
3. Watanabe, P. G., Hefner, R. E., Jr., McGowan, G. R., and Gehring, P. J. Metabolism of vinyl chloride, National Cancer Institute, November, 1974.
4. Watanabe, P. G., McGowan, G. R., Madrid, E. O., and Gehring, P. J. Fate of ¹⁴C-vinyl chloride following inhalation exposure in rats. Presented at the 15th Annual Meeting of the Society of Toxicology, March, 1976, Atlanta, GA.
5. Watanabe, P. G. and Gehring, P. J. The dose-dependent fate of vinyl chloride and its possible relationship to oncogenicity in rats. Conference of Potential Health Hazards for Technological Developments in the Plastic and Synthetic Rubber Industries, WHO-NIEHS sponsored, March, 1976, Research Triangle Park, NC.
6. Watanabe, P. G., Young, J. D., and Gehring, P. J. The importance of nonlinear (dose-dependent) pharmacokinetics to safety evaluation. NCTR sponsored, November, 1976, Little Rock, AR.
7. Watanabe, P. G., Zempel, J. A., and Gehring, P. J. Comparison of the fate of vinyl chloride following single and repeated exposure in rats. Presented at the Sixteenth Annual Meeting of the Society of Toxicology, March, 1977, Toronto, Canada.

The following three papers were presented at the 17th Annual Meeting of the Society of Toxicology, March 12-17, 1978, San Francisco, CA.

8. Gehring, P. J., Watanabe, P. G., and Park, C. N. Resolution of dose response toxicity data for chemicals requiring metabolic activation using as an example--vinyl chloride.

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9. Watanabe, P. G., Young, J. D., Schlachter, M. M., Zempel, J. A. and Karbowski, R. J. Fate of inhaled ethylene dibromide in rats.
10. Watanabe, P. G., Kociba, R. J., Hefner, R. E. Jr., Yakel, H. O. and Leong, B. K. J. Subchronic toxicity studies of 1,2,4-trichlorobenzene in experimental animals.
11. Watanabe, P. G., McKenna, M. J., and Gehring, P. J. Chemobiokinetic perspectives on mechanisms of chemical carcinogenesis. Presented at the International Symposium on Industrial Toxicology, July 25-30, 1977, University of Surrey, Guildford, Surrey, England.
12. Watanabe, P. G., Gehring, P. J., McKenna, M. J., Ramsey, J. C., and Young, J. D. Coupling pharmacokinetic to macromolecular events in assessing the risk of carcinogens. Presented at the Gordon Research Conference for Toxicology and Safety Evaluation, July 31-August 4, 1978.
13. Watanabe, P. G. Kociba, R. J., Keyes, D. G., and Yakel, H. O. Acute and subchronic toxicity of alpha-picoline in rats. Presented at the 18th Annual Meeting of the Society of Toxicology, March 11-15, 1979, New Orleans, LA.
- 14.— Watanabe, P. G. Coupling pharmacokinetics and chemical macromolecular interactions in toxicity assessment. Symposium on Human Exposure to Chemicals, How Much is Too Much, Ottawa Biological and Biochemical Society, March 30, 1979, Ottawa, Canada.

The following two papers were presented at the Annual Meeting of the American Occupational Medical Association, April 30-May 4, 1979, Anaheim, CA.

15. Watanabe, P. G. Direct and indirect action carcinogenesis with metabolic pathways.
16. Watanabe, P. G. Aliphatic chlorinated hydrocarbons: Use of pharmacokinetics in toxicologic evaluation.
17. Watanabe, P. G., Reitz, R. H., Schumann, A. M., Quast, J. F., and Gehring, P. J. Implications of the mechanism of tumorigenicity for risk assessment. Presented at the symposium on the Scientific Basis of Toxicity Assessment, sponsored by Oak Ridge National Laboratories, April 15-19, 1979, Gatlinburg, TN.
18. Watanabe, P. G., Reitz, R. H., Schumann, A. M., Stott, W. T. and Quast, J. F. Correlation of genetic and nongenetic events with neoplasia. Symposium on

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Hepatic Toxicity and Neoplasia in the Rat. 19th Annual Meeting of the Society of Toxicology, March 9-12, 1980, Washington, D.C.

19. Watanabe, P. G., Reitz, R. H., and Fox, T. R. Fate of 1,2-dichloroethane (EDC) in rats following oral administration and inhalation exposure. 2nd Int'l. Symposium Biological Reactive Intermediates, University of Surrey, Guildford, England, July 14-17, 1980.
20. Gehring, P. J., Dietz, F. K., Reitz, R. H. and Watanabe, P. G. Translation of pharmacokinetic/biochemical data into risk assessment. 2nd Int'l. Symposium Biological Reasctive Intermediates, University of Surrey, Guildford, England, July 14-17, 1980.
21. Schumann, A. M., Fox, T. R. and Watanabe, P. G. The Fate of Inhaled Methyl Chloroform (1,1,1-Trichloroethane) in Rats and Mice. Presented at the 20th Annual Meeting of the Society of Toxicology, March 1-5, 1981, San Diego, CA.
22. Reitz, R. H., Fox, T. R., Domoradzki, J. Y., Quast, J. F., and Watanabe, P. G. Fate of 1,2-Dichloroethane (EDC) in Rats After Gavage or Inhalation. Presented at the 20th Annual Meeting of the Society of Toxicology, March 1-5, 1981, San Diego, CA.
23. Stott, W. T., Quast, J. F., and Watanabe, P. G. Differentiation of the Mechanisms of Oncogenicity of 1,4-Dioxane and 1,3-Hexachlorobutadiene in the Rat. Presented at the 20th Annual Meeting of the Society of Toxicology, March 1-5, 1981, San Diego, CA.
24. Watanabe, P. G. Species Differences and Mechanisms of Action in Risk Assessment. Presented at the Joint Conference on Occupational Health, AAIH and AAOM, October 13-16, 1981, Nashville, TN.

The following four papers were presented at the 21st Annual Meeting of the Society of Toxicology, February 22-26, 1982, Boston, MA.

25. Reitz, R. H., Fox, T. R., Quast, J. F., Hermann, E. A. and Watanabe, P. G. Molecular mechanisms involved in the bladder toxicity of sodium orthophenylphenol.
26. Schumann, A. M., Fox, T. R., and Watanabe, P. G. The fate of inhaled methylchloroform (1,1,1-trichloroethane) following single or repeated exposure in rats and mice.

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27. Stott, W. T., Quast, J. F. and Watanabe, P. G. The pharmacokinetics and macromolecular interactions of trichloroethylene in mice and rats as related to oncogenicity.
28. Slesinski, R. S., Guzzie, P. J., Hengler, W. C., Woodside, M. D., Yang, R.S.H. and Watanabe, P. G. Assessment of the mutagenic potential of ethylene dicomine: In vitro and in vivo studies.

The following two papers were presented at the 23rd Annual Meeting of the Society of Toxicology, March 12-16, 1984, Atlanta, Georgia.

29. Schumann, A. M., Fox, T. R., Nitschke, K. D. and Watanabe, P. G. The pharmacokinetics and macromolecular interactions of inhaled ^{14}C -methylene chloride in hamsters and rats.
30. Fox, T. R., Reitz, R. H. and Watanabe, P. G. Evaluation of the genotoxic potential of picloram herbicide in F344 rats.

The following two papers were presented at the 24th Annual Meeting of the Society of Toxicology, March 18-22, 1985, San Diego, CA.

31. Fox, T. R. and Watanabe, P. G. Evidence to Suggest the Presence of an Active Cellular Oncogene (c-onc) in the B6C3F1 Mouse Liver.
32. Hanley, T. R., Jr., Langvardt, P. W., Rusek, T. F., Watanabe, P. G. and Schumann, A. M. Metabolism and disposition of ^{14}C -ethylene carbonate and ^{14}C -ethylene glycol in male Fischer 344 rats.
33. Frantz, S. W., Dryzga, M. D., Freshour, N. L. and Watanabe, P. G. In vivo/in vitro determination of cutaneous penetration of residual monomer from polyacrylamides.
34. Watanabe, P. G., Reitz, R. H., Schumann, A. M. and Fox, T. R. Research Strategies in Industrial Toxicology. Satellite Mtg. Int. Soc. Toxicol., July, 1986, Tokyo, Japan.
35. Watanabe, P. G., Reitz, R. H. and Fox, T. R. Pharmacokinetics and Risk Assessment, Esteve Foundation, Oct., 1986, Mallorca, Spain.
36. Watanabe, P. G. and Reitz, R. H. Mechanistic Considerations in Carcinogenic Risk Estimation, French Soc. Toxicol., May, 1987, Toulouse, France.

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37. Watanabe, P.G., Gersich, F. M. and Mayes, M. A., Environmental Toxicology: An Industry Perspective, Am. Chem. Soc. Mtg. Environ. Chemistry, May, 1987, Jeckyl Island, Georgia.
38. Watanabe, P. G. Use of Integrated Pharmacokinetic-Pharmacodynamic Models for Risk Assessment. Toxicology Forum, July, 1988, Aspen, Colorado.
39. Watanabe, P. G., Reitz, R. H., Schumann, A. M. Mechanistic Considerations in Carcinogenic Risk Estimation. Societe Francaise de Toxicologie, Toulouse, France, April, 1987.

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