

RECENT DEVELOPMENTS

ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT—REGULATION OF CHEMICALS—IN A COUNCIL DECISION, THE OECD HAS ADOPTED PROVISIONS DESIGNED TO PROTECT HUMAN HEALTH AND THE ENVIRONMENT WITHOUT CREATING BARRIERS TO INTERNATIONAL CHEMICALS TRADE

The Chemicals Program of the Organization for Economic Co-operation and Development (OECD) is aimed at the harmonization of chemicals control¹ as a part of the twenty-four member countries' goals of encouraging economic growth and expanding multilateral world trade.² On May 12, 1981, the OECD Council issued a Decision requiring that data generated by the testing of chemicals conducted by member countries be accepted by all OECD nations.³ In two Recommendations⁴ contained in the Decision, the Council also requested that member countries utilize the OECD Test Guidelines⁵ and the OECD Principles of Good Laboratory Practice.⁶ Together, the Guidelines and the Principles provide a scientific standard for evaluating chemical test data.⁷ By coordinating the efforts of member countries, the Decision of May 12, 1981, should provide cost savings for the chemicals industry and for governments.⁸ The Decision also should prevent the development of non-tariff barriers to chemicals trade

¹ OECD, ACTIVITIES OF OECD IN 1980 45 (1981).

² OECD, OECD AT WORK 3 (1969). OECD member states are: Australia, Austria, Belgium, Canada, Denmark, the Federal Republic of Germany, Finland, France, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, the United States, and Yugoslavia (with special status).

³ OECD Decision of the Council concerning the Mutual Acceptance of Data in the Assessment of Chemicals, *adopted* May 12, 1981, OECD Doc. C(81) 30 [hereinafter cited as May 12, 1981 Council Decision]. Final Council acts in the form of Decisions bind all member countries and are implemented in accordance with appropriate national procedure. OECD, OECD AND THE ENVIRONMENT 8 (1976).

⁴ Member nations choose whether or not to enforce Council Recommendations. Recommendations are not binding, but they markedly influence the policy choices of member states. *Id.*

⁵ "The OECD Test Guidelines are the outcome of the Chemicals Testing Programme which was established in 1977 to secure international agreement on the premarket testing of chemicals." OECD, ACTIVITIES OF OECD IN 1980 47 (1981).

⁶ "These Principles seek to ensure that testing is properly conducted and that the quality of the resulting test data is acceptable." *Id.*

⁷ OECD, OECD AGREEMENT ON CHEMICALS, Press/A (81) 24 (June 2, 1981) (OECD Press Release).

⁸ *Id.*

and help to protect human health and the environment.⁹

Chemicals are particularly important for the highly industrialized nations of the OECD. The chemicals industry constitutes one of the dynamic sectors of a modern economy.¹⁰ Chemicals sales in OECD countries exceed 300 billion United States dollars annually.¹¹ Trade among OECD states accounts for a large part of world chemicals exchange.¹²

The production and use of certain chemicals pose hazards to man and his environment. In recent years, public attention has focused on the adverse effects of substances such as mercury, vinyl chloride, PCBs, and asbestos.¹³ This public attention enhanced recognition on the part of the OECD members that sufficient knowledge of existing chemicals was lacking and accentuated the need to scrutinize chemicals more closely before marketing.¹⁴

Since 1969, ten OECD governments have enacted legislation establishing general controls on chemicals.¹⁵ Although these enactments share a common purpose, the legislation varies significantly between countries.¹⁶

The economic and commercial value of chemicals makes their systematic control by governments a delicate matter. Problems arise first due to the intrinsic difficulty of comprehensively regulating the wide variety of chemicals used in different settings.¹⁷ Further problems exist because of the sensitivity to government intervention on the part of innovative industries such as the chemicals industry. Licensing or other delays can affect a new chemical's commercial prospects by allowing competitors to enter the market simultaneously with a similar product.¹⁸ Also, discrepancies between

⁹ *Id.*

¹⁰ OECD, OECD HIGH LEVEL MEETING ON CHEMICALS, Press/A (80) 34 (May 21, 1980) (OECD Press Release).

¹¹ *Id.*

¹² See Appendix.

¹³ OECD, OECD HIGH LEVEL MEETING ON CHEMICALS, Press/A (80) 34 (May 21, 1980) (OECD Press Release).

¹⁴ 98 OECD OBSERVER 26 (May 1979).

¹⁵ "Countries with such legislation include: Switzerland (1969), Japan (1973), Sweden (1973), U.K. (1974), Canada (1975), Norway (1975), U.S. (1976), France (1977), Denmark (1979), and New Zealand (1979). The EEC recently has issued a directive concerning the testing, notification, and assessment of chemicals." OECD, OECD HIGH LEVEL MEETING ON CHEMICALS, Press/A (80) 34 (May 21, 1980) (OECD Press Release).

¹⁶ Introductory Note, 19 INT'L LEGAL MAT'LS 1023 (1980).

¹⁷ More than four million chemicals have been identified. Although most have no commercial value, practical uses have been found for at least 60,000. OECD, THE STATE OF THE ENVIRONMENT IN OECD MEMBER COUNTRIES 103 (1979).

¹⁸ OECD, CHEMICALS IN THE ENVIRONMENT: FUTURE ACTIVITIES IN THE OECD, OECD Doc.

the regulations of different countries create complications. Such discrepancies increase testing costs, waste scarce resources, and interfere with international trade.¹⁹

The May 12, 1981 Council Decision reflects the awareness of these dangers and concern for the environment which have characterized OECD actions in the past decade. In 1970, the Council formed an Environment Committee to promote a pattern of growth and development in harmony with environmental protection.²⁰ Committee endeavors consist primarily of short-term projects. These projects form the basis of reports and conclusions that are made available to governments for consideration as they implement their environmental policies.²¹ Several delegate groups, including the Chemicals Group, assist the Committee by focusing on specific aspects of environmental concerns.²²

At the first meeting of Ministers of the Environment Committee in November, 1974, a procedure was established to encourage international cooperation in the manufacture, testing, and trade of chemicals.²³ Following the proposal of the Committee, the Council recommended that governments make efforts to assess the potential environmental effects of chemicals before they are marketed.²⁴

In 1977, the Chemicals Group began a Chemicals Testing Program as the first step toward harmonization of standards.²⁵ The basic elements for a supplementary program coordinating international chemical control were established at a 1978 Stockholm Conference attended by several OECD members.²⁶ The Council then founded the Special Program on the Control of Chemicals to address prob-

ENV (77) 35 (1977) (Restricted). This document discusses the trade implications of delays caused by government action.

¹⁹ OECD, OECD MEETING ON CHEMICAL CONTROLS, Press A/(80) 32 (May 14, 1980) (OECD Press Release). Varying regulatory standards conceivably can cause nations to mistake environmental safeguards for protectionism. 88 OECD OBSERVER 4 (Feb. 1971).

²⁰ Establishment of this Committee as a plenary body of the organization represented one of the Council's early actions in the environmental area. OECD, OECD AND THE ENVIRONMENT 7 (1976).

²¹ *Id.*

²² Groups concentrate on areas such as chemicals, air, water, and urban problems. OECD, ENVIRONMENTAL STANDARDS: DEFINITIONS AND THE NEED FOR INTERNATIONAL HARMONIZATION 1 (1974).

²³ OECD, OECD AND THE ENVIRONMENT 37 (1976).

²⁴ OECD Recommendation of the Council on the Assessment of the Potential Environmental Effects of Chemicals, adopted Nov. 14, 1974, OECD Doc. C(74)215, reprinted in OECD, OECD AND THE ENVIRONMENT 37 (1976).

²⁵ Introductory Note, 19 INT'L LEGAL MAT'LS 1023 (1980).

²⁶ *Id.*

lem areas identified at the conference.²⁷ The Special Program complements the Chemicals Testing Program and provides a forum for member countries to carry out additional activities designed to develop and harmonize chemical control practices.²⁸

The OECD's efforts in the chemicals area culminated in an agreement reached at the 1980 High Level Meeting of the Chemicals Group.²⁹ The conclusions of the meeting were in turn incorporated and finalized in the May 12, 1981 Council Decision.³⁰ Four key issues were involved in the agreement: the OECD Test Guidelines, the OECD Principles of Good Laboratory Practice, a Minimum Pre-marketing Data Set (MPD), and Mutual Acceptance of Data.³¹

The purpose of the OECD Test Guidelines is to provide a common basis for the acceptance of data generated within member countries.³² The development of a common basis will reduce the costs to governments and industry that are associated with testing and assessment of chemicals.³³

The OECD Test Guidelines were formulated through the efforts of five expert groups, each under the auspices of a lead country.³⁴ The groups drafted reports on test methods currently in use.³⁵ An

²⁷ OECD Decision of the Council concerning a Special Programme on the Control of Chemicals, *adopted* Sept. 21, 1978, OECD Doc. C(78)127 (Final).

²⁸ Introductory Note, 19 INT'L LEGAL MAT'LS 1023 (1980).

²⁹ OECD ENVIRONMENT COMMITTEE, HIGH LEVEL MEETING OF THE CHEMICALS GROUP, OECD Docs. ENV/CHEM/HLM/80.1 - 80.5 (1980), *reprinted in* 19 INT'L LEGAL MAT'LS 1030 (1980).

The meeting's significance was emphasized by Chairman Blair Seaborn's comment: "the meeting represents a major development in bringing our countries together in the control of chemicals and opens the door for international agreement within the OECD on the control of chemicals." OECD, OECD HIGH LEVEL MEETING ON CHEMICALS, Press/A (80) 34 (May 21, 1980) (OECD Press Release).

³⁰ May 12, 1981 Council Decision, *supra* note 3.

³¹ HIGH LEVEL MEETING OF THE CHEMICALS GROUP, *supra* note 29.

³² OECD, OECD TEST GUIDELINES, OECD Doc. ENV/CHEM/HLM/80.1 *reprinted in* 19 INT'L LEGAL MAT'LS 1030 (1980).

³³ *Id.*

³⁴ Expert groups prepared reports on test methods in the following areas:

- (1) physical—chemical properties of chemical substances (lead country—Germany);
- (2) effects from chemical substances on biotic systems other than man (lead country—the Netherlands);
- (3) degradation—accumulation of chemical substances (lead countries—Japan/Germany);
- (4) long-term health effects of chemical substances (lead country—the United States);
- (5) short-term health effects of chemical substances (lead country—the United Kingdom).

Id.

³⁵ Most industrial countries test the safety of chemicals before marketing. Experience has shown the cost and complexity of advance assessment. No chemical can be categorically classified as safe, because the hazardous nature of a chemical often depends on the quantity

exhaustive consultative process was undertaken with the solicitation of reports from international institutions, academicians, industry, and other interested parties.³⁶ These reports resulted in over one hundred test guidelines in the fields of physical chemistry, degradation/accumulation, short and long term toxicology, and ecotoxicology.³⁷

The second issue of the agreement also aims at ensuring that trustworthy data is derived from testing.³⁸ The Principles of Good Laboratory Practice govern the organizational processes and the conditions under which laboratory studies are planned, performed, recorded, and reported.³⁹ The Principles form the initial component of the OECD approach to good laboratory practice.⁴⁰

The third part of the agreement contains the Minimum Pre-marketing Set of Data (MPD).⁴¹ The MPD consists of the name, identity, properties, and test results of a designated chemical.⁴² As a rule, these categories offer the minimum information necessary for an

in which it is produced or employed. Determining the reliability of a chemical demands time, careful surveillance, and experimentation. 88 OECD OBSERVER 3 (Sept. 1977).

³⁶ OECD, OECD TEST GUIDELINES, OECD Doc. ENV/CHEM/HLM/80.1 *reprinted in* 19 INT'L LEGAL MAT'LS 1030 (1980).

³⁷ *Id.* Because the OECD Test Guidelines will become outdated with scientific and technological advances, a mechanism for updating the guidelines is necessary. As a one year interim measure, resources within the Special Program on the Control of Chemicals are to be used to begin the updating process. OECD, UP-DATING OF THE OECD TEST GUIDELINES, OECD Doc. ENV/CHEM/HLM/80.2 *reprinted in* 19 INT'L LEGAL MAT'LS 1055 (1980).

³⁸ OECD, OECD PRINCIPLES OF GOOD LABORATORY PRACTICE, OECD Doc. ENV/CHEM/HLM/80.3 *reprinted in* 19 INT'L LEGAL MAT'LS 1057 (1980).

³⁹ The principles cover:

- (1) test facility organization and personnel responsibilities;
- (2) quality assurance programs;
- (3) test facility size and construction;
- (4) apparatus, materials, and reagents;
- (5) test systems, location, and design;
- (6) test and reference substances receipt, handling, sampling, and characterizing;
- (7) standard operating procedures;
- (8) performance of the study;
- (9) reporting of study results;
- (10) storage, retention of records, and materials.

Id.

⁴⁰ *Id.*

⁴¹ OECD, MINIMUM PRE-MARKETING SET OF DATA, OECD Doc. ENV/CHEM/HLM/80.4 *reprinted in* 19 INT'L LEGAL MAT'LS 1079 (1980).

The Minimum Pre-marketing Set of Data has not yet come before the Council for final consideration. The United States and several other member countries are continuing negotiations aimed at clarifying the ramifications of a Council MPD Decision. Telephone interview with Ms. Judy Kosavich, International Activities Office, U.S. Environmental Protection Agency, (Aug. 4, 1981).

⁴² OECD, MINIMUM PRE-MARKETING SET OF DATA, OECD Doc. ENV/CHEM/HLM/80.4 *reprinted in* 19 INT'L LEGAL MAT'LS 1079 (1980).

initial assessment of the potential hazards of a new chemical.⁴³ Where the MPD is not sufficient for a complete assessment, it will serve to identify the additional data required. This will aid in further stages of testing.⁴⁴

Agreement on the fourth issue, Mutual Acceptance of Data, represents the main achievement of the meeting.⁴⁵ This achievement was predicated on the creation of the OECD Test Guidelines and OECD Principles of Good Laboratory Practice.⁴⁶ Mutual Acceptance of Data means that "data generated in one country, in accordance with OECD Test Guidelines and OECD Principles of Good Laboratory Practice should be accepted in other OECD countries for purposes of assessment and other uses relating to protection of man and the environment."⁴⁷ In addition to facilitating coordinated environmental action, Mutual Acceptance of Data should reduce testing costs and promote the effective employment of testing facilities and personnel in member countries.⁴⁸

In the United States, implementation of the May 12, 1981 Council Decision must be in conformance with existing law.⁴⁹ The Toxic Substances Control Act (TSCA) of 1976 authorizes the regulation of chemical substances which present an unreasonable risk of injury to health or the environment.⁵⁰ In large part, the TSCA relies on testing requirements to prevent hazardous chemicals from entering the market. For testing purposes, the act distinguishes "existing" chemicals from "new" chemicals.⁵¹ The Administrator of the Environmental Protection Agency (EPA) makes this distinction through the use of an inventory of each chemical substance manufactured or processed in the United States.⁵² Chemicals not listed in the inventory are "new" chemicals.

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ OECD, OECD HIGH LEVEL MEETING ON CHEMICALS, Press/A(80)34 (May 21, 1980) (OECD Press Release).

⁴⁶ OECD, MUTUAL ACCEPTANCE OF DATA, OECD Doc. ENV/CHEM/HLM/80.5 *reprinted in* 19 INT'L LEGAL MAT'LS 1083 (1980).

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ U.S. CONST. art. VI, cl. 2. The May 12, 1981 Council Decision, though binding on member countries, is not in the form of a treaty. Consequently, under the United States Constitution the Decision does not preempt and must yield to standing treaties and statutes.

⁵⁰ 15 U.S.C. § 2601 (1976). The statute gives broad powers of implementation to the Administrator of the Environmental Protection Agency (EPA). 15 U.S.C. § 2601(c) (1976). Substances specifically excluded from coverage are mixtures, pesticides, tobacco products, any source or special nuclear material, food, food additives, drugs, and cosmetics. 15 U.S.C. § 2602(B)(i-vi) (1976).

⁵¹ 15 U.S.C. §§ 2603(4), 2604(5) (1976).

⁵² 15 U.S.C. § 2607(b)(1) (1976).

The act requires manufacturers⁵³ to test "existing" chemicals, but the Environmental Protection Agency must set the standards to be employed.⁵⁴ Presently, the EPA is developing a series of test standards for the various risks to health and the environment.⁵⁵ The standards will specify test protocols and methods the EPA finds acceptable for obtaining, analyzing, and presenting test data.⁵⁶ The standards will also address factors in the laboratory which could affect the quality of test data.⁵⁷ Test results will not be acceptable to the EPA if conducted in a laboratory that does not comply with the standards established.⁵⁸

The Environmental Protection Agency does not have licensing or registration authority. As the EPA must depend on the manufacturer's information to assess an "existing" chemical's potential risk, the agency's testing requirements should be explicit.⁵⁹ The scope of the proposed EPA standards exceeds the OECD Principles of Good Laboratory Practice.⁶⁰ Although the proposed standards of the EPA and the Test Guidelines of the OECD are essentially concurrent,⁶¹ OECD Test Guidelines cannot become United States law unless the EPA approves and publishes them in the Federal Register.⁶²

The Environmental Protection Agency may recommend but not require specific testing procedures for "new" chemicals.⁶³ According-

⁵³ "The term 'manufacture' means to import into the customs territory of the United States . . . , produce, or manufacture." 15 U.S.C. § 2602(7) (1976).

⁵⁴ 15 U.S.C. § 2603(b)(1) (1976).

⁵⁵ Proposed test and good laboratory practice standards for the Toxic Substances Control Act appear in 44 Fed. Reg. 44,054 (1979). The EPA's semiannual agenda of regulations gives the following timetable for the standards:

Dec. 1981—Notice of Proposed Rule-making;

Dec. 1982—Final Rule.

46 Fed. Reg. 23,692 (1981).

⁵⁶ 44 Fed. Reg. 44,054 (1979).

⁵⁷ *Id.* These factors include the experience and educational level of laboratory personnel, the care of test animals, and the condition of the laboratory's equipment.

⁵⁸ ENVIRONMENT AND NATURAL RESOURCES POLICY DIVISION FOR THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS U.S. SENATE, 96th CONG., 1st SESS., ENVIRONMENT PROTECTION AFFAIRS OF THE NINETY-FIFTH CONGRESS 162 (Comm. Print May, 1979).

⁵⁹ Telephone interview with Ms. Margaret E. Brown, International Activities Office, U.S. Environmental Protection Agency, (Sept. 22, 1980) [hereinafter cited as Telephone Interview with Brown].

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² 15 U.S.C. § 2605(2)(A) (1976). Such action has not been taken to date.

⁶³ 46 Fed. Reg. 8,986 (1981). Section five of the Toxic Substances Control Act calls for the manufacturer to submit a notice to the Administrator ninety days prior to manufacture of "new" chemicals. 15 U.S.C. § 2604(A)(1) (1976). Additionally, the manufacturer must submit data substantiating his belief that the "manufacture, processing, distribution in commerce, use, and disposal of the chemical substance, or any combination of such activities will not

ly, the EPA has developed guidelines for testing "new" substances distinct from the "existing" chemicals testing standards.⁶⁴ The agency's guidelines contain two elements: (1) a base set of data which will permit an initial assessment of the potential risk of a chemical substance, and (2) recommended test protocols for developing the data.⁶⁵ Although the TSCA requires pre-manufacture testing rather than the pre-market approach supported by the OECD, the Environmental Protection Agency's present guidelines are almost identical to the OECD's Minimum Pre-market Set of Data (MPD).⁶⁶

By approving the May 12, 1981 Council Decision, the United States has committed itself to the examination of data accumulated by other OECD member nations. In this sense, the United States will accept data from OECD countries.⁶⁷ However, data acceptance is different from acceptance of a risk assessment.⁶⁸ The United States may make a risk assessment independently, or may require additional data before making an assessment.⁶⁹ Such action by individual OECD members may cause problems by impeding the entrance of various chemicals into their markets, thereby creating the type of trade barriers the May 12, 1981 Council Decision seeks to prevent.⁷⁰

Another concern which has implications for international trade is the disclosure of test data. Under TSCA, the EPA Administrator may disclose data if it is determined necessary to protect health or the environment from an unreasonable risk.⁷¹ European countries on the other hand, believe the data should remain confidential and unavailable to the public.⁷² Foreign manufacturers are hesitant to provide their data to United States authorities due to this discrepancy in data availability.⁷³

present an unreasonable risk of injury to health or the environment . . ." 15 U.S.C. § 2604(b)(2)(B)(i,ii) (1976). In other words, a manufacturer convinced that a "new" chemical does not present an unreasonable risk must persuade the EPA of the chemical's safety.

⁶⁴ 46 Fed. Reg. 8,986 (1981). The guidelines for the testing of "new" chemicals were signed by the EPA Administrator for the Carter Administration, Mr. Douglas M. Costle, in one of his last official actions. 4 INT'L ENV. REP. (BNA) 624 (1981). The Reagan Administration is considering a change in the regulations. The final rule is to be announced later this year. 46 Fed. Reg. 23,725 (1981).

⁶⁵ 46 Fed. Reg. 8,986 (1981).

⁶⁶ 4 INT'L ENV. REP. (BNA) 624 (1981). The EPA guidelines differ from the OECD Minimum Pre-market set of Data by recommending two screening tests for mutagenicity.

⁶⁷ Telephone Interview with Brown, *supra* note 59.

⁶⁸ *Id.*

⁶⁹ *Id.*

⁷⁰ 3 INT'L ENV. REP. (BNA) 497 (1980); OECD, OECD AGREEMENT ON CHEMICALS CONTROL, Press/A(81)24 (June 2, 1981) (OECD Press Release).

⁷¹ 15 U.S.C. § 2613(a)(3) (1976).

⁷² 3 INT'L ENV. REP. (BNA) 466 (1980).

⁷³ *Id.*

The May 12, 1981 Council Decision is not the complete solution to freeing the international chemicals market from trade complications. The OECD's future efforts to harmonize the control of chemicals should continue in the step-by-step pattern employed during the past decade, as each new action depends on and relates to prior actions.⁷⁴ This process should move OECD countries closer to realization of an unhampered flow of chemicals between member nations according to procedures developed to protect man and the environment.⁷⁵ In this regard, the May 12, 1981 Council Decision to mutually accept test data generated in accordance with the recommended OECD Test Guidelines and OECD Principles of Good Laboratory Practice is an important prerequisite to future international solutions for the regulation of chemicals.

Walter Ballew, III

⁷⁴OECD, ORIENTATION OF FUTURE ACTIVITIES, OECD Doc. ENV/CHEM/HLM/80.8 reprinted in 19 INTL LEGAL MATLS 1092 (1980).

⁷⁵ *Id.*

EXPORTS OF CHEMICAL PRODUCTS IN 1977

In million dollars

		OECD MEMBER COUNTRIES				NON-MEMBER COUNTRIES		TOTAL (EXCLUDING INTRA-EUROPEAN TRADE)		COUNTRY	
		EUROPEAN MEMBER COUNTRIES		JAPAN		TOTAL OECD		GRAND TOTAL			
EEC	OTHERS	TOTAL	NORTH AMERICA	AUSTRALIA	NEW ZEALAND	TOTAL OECD	NON-MEMBER COUNTRIES	GRAND TOTAL	TOTAL (EXCLUDING INTRA-EUROPEAN TRADE)		
7 455	3 258	10 713	966	619		12 298	4 537	16 835	6 122	Germany	
422	120	542	16	3		561	407	968	426	Austria	
4 121	505	4 626	162	64		4 852	849	5 701	1 075	BLEU	
263	294	557	49	24		630	192	822	265	Denmark	
294	142	436	44	30		510	349	859	423	Spain	
124	89	213	15	8		236	100	336	123	Finland	
4 391	1 092	5 483	744	177		6 404	2 431	8 835	3 352	France	
51	5	56	2	...		58	5	143	87	Greece	
407	46	453	101	33		587	95	682	229	Ireland	
...	1	1	1	Iceland	
1 341	593	1 934	251	66		2 251	1 459	3 710	1 776	Italy	
277	192	469	39	16		524	133	657	188	Norway	
4 731	809	5 540	363	121		6 024	1 401	7 425	1 885	Netherlands	
71	7	78	6	3		87	42	129	51	Portugal	
2 810	990	3 800	551	451		4 802	3 262	8 064	4 264	United Kingdom	
534	322	856	58	33		947	172	1 119	263	Sweden	
2 106	589	2 695	295	318		3 308	1 496	4 804	2 109	Switzerland	
7	2	9	1	1		11	12	23	14	Turkey	
29 405	9 055	38 460	3 663	1 967		44 090	17 023	61 113	22 653	Total	
277	29	306	1 394	99		1 799	312	2 111	...	Canada	
nd	nd	nd	nd	nd		nd	nd	nd	...	United States	
468	114	582	629	190		1 402	3 627	5 029	...	Japan	
nd	nd	nd	nd	nd		nd	nd	nd	...	Australia	

OECD, THE CHEMICAL INDUSTRY 21-22 (1978).

