

## EXPLANATORY NOTES

The Fourteenth Edition of *The Merck Index* contains 10,200 monographs describing significant chemicals, drugs, and biological substances. The entries cover a wide range of compounds which have been selected on the basis of present or historic importance and interest. Since the publication of the Thirteenth Edition in 2001, over 5,000 monographs have been significantly revised and updated. More than five hundred monographs have either been combined or deleted from the manuscript to make room for hundreds of new entries. Nearly 450 of these monographs, as well as 540 monographs archived from the Twelfth Edition, are presented in their original form on the companion CD which accompanies this volume.

Entries are generally limited to single substances and related compounds such as isomers or salts. While multi-component drugs are, for the most part, excluded, there are a number of monographs devoted to families of natural products or biological substances. Monographs vary greatly in length. The length of a monograph, however, is not necessarily indicative of the importance of a compound, but rather may simply be an indication of the amount of relevant published information available for the compound.

For the purpose of illustrating the general monograph format, a typical monograph is depicted and the components are identified. While all possible categories of information in a monograph are described below, it must be emphasized that not all categories are present in every monograph.

**Monograph Number.** Sequential accession numbers are assigned to monographs which are alphabetized by title. Entries in the indices are referenced to these accession numbers, not to page numbers. (*Note:* Monograph numbers in the Fourteenth Edition do not correspond to Thirteenth Edition monograph numbers.)

**Monograph Title.** Titles are usually simple chemical names or in the case of drugs, the commonly used generic name such as the USAN (United States Adopted Name) or INN (International Nonproprietary Name). Registered trademarks, designated by ®, are used for a small number of entry titles, primarily when nonproprietary terms are not available. Plant monographs are titled using a common name rather than the full botanical name.

**Chemical Abstracts Registry Number(s).** The Chemical Abstracts Service (CAS) Registry Number appears following the title. These unique identifiers are provided for title substances and for selected derivatives. Where appropriate, numbers for isomeric and unspecified forms of the compound are listed. Descriptors are appended to the entry if more than one registry number has been associated with the compound.

**Chemical Abstracts Name(s).** The uninverted form of the CAS Index Name appears in native font following the CAS Registry Number. When a specific isomer is being discussed, stereochemical descriptors have been included to more clearly delineate that isomer. CAS Registry Numbers and CAS Index Names are provided as aids for further searching of the compound of interest in *Chemical Abstracts* and elsewhere.

**Alternate Name(s).** Other chemical names, trivial names, experimental drug codes, and trademarks that identify the entry are listed. Listing of trademarks is for information purposes only and it should not be assumed that

the trademarks are in current use. The first letter of each trademark is capitalized; absence of capitalization, however, does not preclude that a name may either currently be a proprietary name, or may once have been the subject of proprietary rights. If known, the company associated with a particular trademark (as a manufacturer, distributor or trademark owner) is listed alongside the trademark in the Name Index.

**Molecular Formula, Molecular Weight, % Composition.** Elements in the molecular formula are listed according to the Hill convention (C, H, then other elements in alphabetical order). Formula and molecular weight are provided for title compounds having a specific known structure. All molecular weights have been recalculated using the 2005 IUPAC Table of Standard Atomic Weights.

**Literature References.** A concise reference history of each compound is provided. Frequently, there is a brief description or capsule statement to summarize the significance of the compound. References to isolation, preparation or synthesis, patent information, and structural studies are cited. While reference is made to various methods of synthesis, the intent is to give a representative, but by no means exhaustive list. Patent numbers are provided merely as a source of preparative information; however, whenever possible, the product patent has been cited in monographs. Patents are cited using the two letter international country code followed by the number in boldface print; the year of publication and the assignee are included if known. References to pharmacology or biological activity, clinical trials, and toxicity studies may be included, where appropriate. Review articles are usually cited at the end of the references. Reviews pertaining to a group of closely related compounds or to a family of natural substances are generally listed only in the monograph for the parent element or compound. Literature references are cited in the conventional manner; journal abbreviations generally correspond to those in CASSI (CAS Source Index<sup>®</sup>) or in the *List of Journals Indexed in Index Medicus*. The number of the first page of the reference is given; first and last page numbers are listed for reviews.

**Structure.** For this edition, all structures have been drawn according to current conventions using CambridgeSoft's ChemDraw<sup>®</sup> software package. Structural depictions, including stereochemistry, if relevant, are included in nearly 6,700 monographs. Structures that do not correspond precisely to the monograph title have been labeled to identify the specific form depicted. Standard conventions of heavy wedges and dotted lines to show bonds directed above or below the plane of the paper are used where appropriate. Whenever possible, double bond geometry has been defined within the structure. Amino acid residues are assumed to be L unless specified otherwise. In addition, 1,850 monographs contain line formulae showing molecular arrangements.

**Physical Data.** Data are cited as found in the literature. When several alternate data values appear in the literature, the data is evaluated and representative selections are made. The values are then reported with the corresponding source. Whenever possible, the color of a substance is stated, but the absence of color (white or colorless) is often omitted. Temperatures are given in degrees Celsius, unless otherwise noted. When solubilities are

determined at room temperature (about 25°C), the temperature is generally omitted. When optical rotations are measured in water, the solvent is usually not specified. For ultraviolet absorption measurements, the solvent is given within parentheses.

An effort has been made to provide toxicity data (e.g. LD<sub>50</sub>, LC<sub>50</sub>) and to identify the source of this information. **Caution** and/or **Note** statements are also provided in a number of monographs. Specific statements are given for compounds on the U.S. Government's Schedules of Controlled Substances in Title 21 of the Code of Federal Regulations (CFR), for compounds listed as suspected or confirmed carcinogens in the *Eleventh Report on Carcinogens* issued in 2004 by the U.S. Department of Health and Human Services (USDHHS), and for chemicals considered potential occupational hazards as described in sources such as the *NIOSH Pocket Guide to Chemical Hazards (USDHHS)*. *Note*: Absence of toxicity data or specific cautions does not imply that toxic effects do not exist.

**Derivatives.** When derivatives (isomers, salts, etc.) of the title compound are described in a monograph, the information appears in the paragraph(s) directly following the physical data. These paragraphs may also be used to describe specific members of a large family of natural substances. Derivative data presentation mirrors that of the title compound and may include registry numbers, chemical and alternate names, molecular weights, percentage composition, literature references, and physical properties.

**Use.** Descriptions of specific uses, which are not medical or veterinary therapeutic applications, are summarized under this heading.

**Therapeutic Category and Therapeutic Category (Veterinary).** In most cases, therapeutic categories reflect the accepted terminology in the medical literature. When available, mode of action information is included in the literature references section of the monograph. Monographs for human drugs have been indexed by both therapeutic category and biological activity beginning on page THER-1.

*The Merck Index* is not intended as an official therapeutic guide. Inclusion of a drug or any other compound in this book is not an endorsement, but merely a statement of the fact that such a substance exists. THERAPEUTIC CATEGORY and THERAPEUTIC CATEGORY (VETERINARY) paragraphs are intended only as summary statements of major pharmacological properties or indications for the individual compounds. For additional information on uses, dosage, side effects, and adverse reactions, readers are directed to consult pertinent scientific and professional publications, product circulars, information sheets or material safety data sheets prepared or published by the respective manufacturers.

**Indices.** Four indices—Name, Formula, CAS Registry Number and Therapeutic Category—are included; each entry directs the reader to the number of the monograph in which the substance of interest is described. More than 60,000 synonyms, including titles, CAS names, alternate names, trademarks, and derivative names are contained in the **Name Index**. If known, trademarks have been matched with an associated company. An abbreviated form of the company name appears in brackets following the trademark. The complete company name and location is listed in an updated and expanded Company

Register in the TABLES section of the book. Company names are provided as a source of additional information and do not necessarily imply trademark ownership. Due to reorganizations or mergers, some company names may have changed since the original matching process was completed.

More than 7,500 entries appear in the **Formula Index**. This index contains the molecular formula for the title compounds and derivatives other than acid addition salts, hydrates or isomers.

The **CAS Registry Number Index** contains more than 12,000 entries arranged in ascending Registry Number order. Descriptors are appended to the entry if more than one registry number may be associated with the compound.

In the **Therapeutic Category and Biological Activity Index**, monographs describing human drugs have been listed by one or more therapeutic indications and/or mechanisms of action. Cross references to closely related categories and mechanisms have been included. Whenever appropriate, subclassifications have been developed by grouping compounds according to chemical or pharmacological similarities.

**Organic Name Reactions.** This section is comprised of 450 named reactions and an index. A concise reference history and associated reaction schema are provided for each reaction or subreaction.

**Tables.** A compilation of over 70 pages of tables is provided to supplement the material presented in the monographs. This section has been extensively revised for this edition and now includes tables of Acronyms, Vaccines, and Physical Constants.

Great care has been taken to assure the accuracy of the information contained in *The Merck Index*. However, the Editorial Staff and the Publisher cannot be responsible for errors incurred in publication or for any consequences arising from use of the information published in *The Merck Index*. Accordingly, reference to original sources is strongly encouraged, as is reporting of errors and omissions in order to assure that appropriate changes may be made in the next edition.