高·等·学·校·规·划·教·材

农药专业英语

SPECIAL ENGLISH FOR PESTICIDE

骆焱平　符悦冠　主　编
李双梅　刘　健　副主编

ENGLISH

化学工业出版社

高等学校规划教材

农药专业英语

骆焱平　符悦冠　主　编
李双梅　刘　健　副主编

化学工业出版社
·北京·

本书是根据近年来农药学科的快速发展要求编写而成。分别介绍了化学农药、生物农药、农药毒理学、农药剂型、农药生物测定、农药残留分析、抗药性、农药使用技术、农药管理及环境与健康等方面内容。书后附录包括常见农药专业词根、前后缀，农药剂型名称及代码，农药中英文名称。

本书可供农药学专业的本科生和研究生使用，也可作相关专业人员的教学和参考用书。

图书在版编目（CIP）数据

农药专业英语 / 骆焱平，符悦冠主编. —北京：化学工业出版社，2009. 2
高等学校规划教材
ISBN 978-7-122-04413-6

Ⅰ. 农… Ⅱ. ①骆…②符… Ⅲ. 农药-英语-高等学校-教材 Ⅳ.H31

中国版本图书馆 CIP 数据核字（2008）第 200658 号

责任编辑：刘　军　　装帧设计：关　飞
责任校对：李　林

出版发行：化学工业出版社（北京市东城区青年湖南街 13 号　邮政编码 100011）
印　　装：三河市延风印装厂
720mm×1000mm　1/16　印张 15¾　字数 325 千字　2009 年 3 月北京第 1 版第 1 次印刷

购书咨询：010-64518888（传真：010-64519686）　售后服务：010-64518899
网　　址：http://www.cip.com.cn
凡购买本书，如有缺损质量问题，本社销售中心负责调换。

定　　价：32.00 元

《农药专业英语》

编写人员名单

主　　编　骆焱平　符悦冠

副 主 编　李双梅　刘　健

参编人员　（按姓氏笔画排列）

王宏佳　刘　奎　朱朝华　江志利

张　莉　杨育红　郑服丛　薛超彬

前　言

随着科学技术的不断发展，农药生产已由过去依靠单纯的天然获取转变为如今的有机合成，特别是高通量筛选和组合化学在农药生产中的应用，使得农药的开发速度不断加快，新的农药品种不断出现。然而，农药新品种、新技术大多是由跨国农药公司开发的，各种资料和文献主要以英语为载体，国内学者和广大农药学专业师生在查阅和参考相关数据时，如果没有扎实的专业英语知识，很难对国际农药学动向作全面的了解，也很难加以甄别和吸收。因此，学好农药学专业英语显得尤为重要。然而，目前国内并没有专门农药学专业英语教材，基于此，我们组织编写了这本《农药专业英语》。适用对象为植物保护、农药学等专业的本科生和研究生，也可作为参考资料供相关专业人士使用。

全书分为 10 个部分，共计 20 个单元 40 篇课文，分别介绍了化学农药、生物农药、农药毒理学、农药剂型、农药生物测定、农药残留分析、抗药性、农药使用技术、农药管理及农药环境与健康等方面的内容。全书内容丰富全面，专业词汇完备，每个单元后面均列有详细注释，并提供一定量的习题进行练习和巩固。书后附录包括常见农药专业英语词根、前后缀，农药剂型名称及代码，农药中英文名称。

本书从化学农药、生物农药到农药生物测定；从农药剂型、使用技术到农药管理；从农药毒理学、农药残留分析到抗药性，以及农药对环境和人类健康的影响等，均选编了相关文献，列举了大量专业词汇，希望能帮助广大学生对农药学专业英语有一个全面、系统和深入的了解，也希望他们在进一步的学习和工作中，能够熟练使用专业外语，这正是编者编写本书的目的之所在。

本书出版得到公益性行业（农业）科研专项项目（nyhyzx07-032; 200803023）和“十一五”国家科技支撑计划项目（2007BAD48B00）的资助。

本书承蒙郑服丛教授审稿，在编写过程中提供了很多宝贵的意见，在此谨表深深的谢意。

由于时间仓促，加之编者水平有限，不足之处在所难免，恳请同行专家及广大师生批评指正。

编　者

2008 年 11 月

Contents

PART I
CHEMICAL PESTICIDES

Unit 1
Chemistry of Pesticides

History

Although the use of chemicals to combat agricultural pests dates from antiquity, the large scale utilization of chemicals as major components of pest management systems is a twentieth century development. However, types of chemicals in use have changed substantially in response to environmental concerns that have arisen since their introduction. As late as 1950, many inorganic chemicals were still in use, including calcium arsenate, copper sulfate, lead arsenate, and sulfur, but, with the exception of sulfur, these materials were almost completely displaced by synthetic organic pesticides in subsequent years.

The 1940s and 1950s were productive years in terms of new synthetic organic chemistry. The chemical industry faced a major challenge in its efforts to synthesize and manufacture replacements for materials that were critically needed to protect crops from insect pests and protect personnel in tropical areas from malaria and other insect-borne diseases. The discovery of the insecticidal properties of hexachlorocyclohexane almost simultaneously in France and England in 1940 was one of the first successes. The discovery of the insecticidal activity of Lindane (the gamma isomer of hexachlorocyclohexane), followed by the widely acclaimed successes of DDT in controlling vector-borne diseases, reinforced efforts to discover and commercialize new synthetic insecticides. At the end of World War II, newly developed chemical technologies became the basis for the manufacture of a number of new insecticides, particularly the application of the Diels-Alder reaction to synthesize cyclodiene insecticides. Because their acute mammalian toxicity was generally low and their spectrum of activity was very broad, such insecticides could be used to control many agricultural insect pests. The organochlorine insecticides were described as "nerve poisons" .

Another structural lead emerged from studies of the pharmacological properties of the alkaloid physostigmine, the toxico-principle of the beans of the plant *Physostigma venenosum*, which is used as an ordeal poison in West Africa. Extensive research on the structure and activity of physostigmine showed that it was a potent inhibitor of cholinesterase, the enzyme responsible for degrading acetylcholine, a substance involved in neural transmission. Synthetic analogs used medicinally are ionizable compounds; nonionizable analogs were shown to have insecticidal activity. In 1947, several *N*-methylcarbamates that possessed significant acetylcholinesterase inhibitory activity were synthesized in Switzerland by the Ciba-Geigy Company (now Syngenta) and developed as insecticides. One of the best known of the carbamate insecticides is carbaryl (*N*-methylnaphthyl carbamate). In Germany in 1937, in the course of investigations to find substitutes for nicotine, Schrader noted the insecticidal activity of organophosphorus compounds. Investigations were diverted from pesticide development to the development of potential agents for use in chemical warfare because some organophosphates were powerful inhibitors of cholinesterase and were very toxic to mammals. The first practical organophosphorus insecticide was Bladan, which contained tetraethyl pyrophophosphate. It was marketed in Germany in 1944. Subsequently, the discovery of parathion by Schrader in 1944 was followed by the synthesis of many related compounds. The high mammalian toxicity of many organophosphates calls for extreme caution in their practical application, but by varying substituent patterns, many less toxic analogs were manufactured and approved for use as insecticides, fungicides, and plant growth regulators, among other agricultural uses.

These new developments in the control of agricultural insect pests were paralleled in the search for chemical agents for control of weeds and plant diseases. Research into the nature of plant growth regulators led to the identification of indoleacetic acid as the first of the plant growth hormones. This compound and a variety of analogs were shown to elicit a variety of responses in plants, but it was not until the 1940s that these compounds were applied to weed control. Description of the growth regulating activity of 2,4-dichlorophenoxyacetic acid (2,4-D) in 1942 was followed by field trials in which it was shown to kill weeds selectively. Subsequently 2,4-D was developed for use as a major herbicide for control of weeds in corn and other cereals. It was widely used to control annual and perennial broadleaf weeds in tolerant crops and on noncrop areas. Although dinitrophenols had been used in the 1930s, the scale of herbicide use in agriculture expanded after the introduction of 2,4-D and this was followed by the introduction of atrazine, the first of the triazine herbicides, in 1958. Since then many, new herbicides that represent a wide variety of chemical classes have been comercialized to improve environmental safety, selectivity, and weed control at low rates of application.

The introduction of newer synthetic techniques, such as combinatorial chemistry, which can generate large numbers of new compounds, made it is possible to increase the throughput of compounds. Although there is a constant flow of new compounds through the developmental stages, industrial resources dedicated to the search for improved chemical controls are currently shifting to biotechnological approaches. One application of biotechnology is to increase herbicide tolerance in existing crops by genetic modification. Seeds of crop plants that are resistant to environmentally safe herbicides have been produced by genetic manipulation. Weeds then can be eliminated by conventional herbicides without damage to the growing crop.

Classification of Pesticides

1 *Nomenclature*

Active ingredients of pesticides represent a very diverse array of chemical structures including many biological agents. Many pesticide structures are very complex and cannot be categorized simply; therefore, classification systems in use have evolved to accommodate the increasing diversity of chemical and biological agents used in pest control or management.

One convenient basis for classification is the target organism. Thus pesticides may be classified, for example, as herbicides, insecticides, fungicides, nematicides and rodenticides. These classes then may be conveniently subdivided into smaller classes based on chemical structure, but a classification system based on mode of action may be equally valid. From the point of view of the toxicologist or the applicator, classification systems based on hazard are important. The terminology and classification systems adopted often may be quite arbitrary and occasionally are misleading

From a legal standpoint, if it is claimed that a substance may be used to control, mitigate, or repel pests, it must be regarded as a pesticide. "Active ingredient" as defined in the data requirements for USEPA registration means "any substance (or group of structurally similar substances) that will prevent, destroy, repel or mitigate any pest, or that functions as a plant regulator, desiccant, or defoliant within the meaning of FIFRA" . Thus, substances such as repellents and attractants are covered by pesticide legislation and are included in discussions of pesticides.

Assessments of toxicity must be based on material of clearly defined composition. Data obtained from any studies or tests conducted on pesticides should be preceded by a clear statement of the identity of the test material. Pesticides are sold to the user as formulated products, which contain, in addition to the active ingredient, a variety of additives and diluents. "Formulation" in the legal sense means. (1) the process of mixing, blending or dilution of one or more active ingredients, without an intended chemical reaction, to obtain a manufacturing use product or an end use product, or (2) the repackaging of any registered product

The purpose of formulation is to improve the efficacy of the pesticide, facilitate its application, and ensure that it remains stable in storage. Thus, additives include inert ingredients, such as wetting agents, stickers, emulsifiers, antioxidants, and diluents. The label names the active ingredient and defines the amount contained in the formulation. Most pesticides have common names agreed upon by the International Organization for Standardization and it is usual to refer to the active ingredient by its common name. Occasionally, the common name may refer to a product of defined composition that is not homogeneous, but may contain isomers or closely related compounds. Chemical compounds of known structure may be described uniquely by systematic chemical names, which are given according to the rules of the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts nomenclature.

2 *Structures and Stereochemistry*

The conventional structural representation of a chemical compound uniquely defines its attributes. It represents the spatial arrangement of the component atoms and depicts bond types. To the chemist, it indicates potential reactivity and it can be used as a basis for estimation of physical properties and environmental behavior.

Details of spatial arrangements are an important factor in defining the biological activity of a compound. Carbon atoms in organic compounds are tetravalent. A molecule that contains a carbon atom with four different substituents lacks a center of symmetry and a molecule that contains one or more such asymmetric carbon atoms is termed a chiral molecule. If a molecule has one or more chiral centers, nonsuperimposable structures that are mirror images are termed enantiomers. Molecules that have nonsuperimposable structures that are not mirror images are called diastereoisomers. Diastereoisomers differ in their physical and chemical properties, whereas enantiomers have identical physical and chemical properties, and differ only in their ability to rotate the plane of polarized light to different extents.

Biological processes such as those that occur at the surface of an enzyme or protein are chiral. They involve interactions between molecules that have a three-dimensional arrangement that is defined by energy relationships. The chirality of a molecule will, therefore, determine its behavior in a biological environment. Processes at the molecular level may be triggered or inhibited by interactions between chiral biological receptors and biologically active molecules. Most natural organic compounds are chiral and occur in a single enantiomeric form.

Chirality is an increasingly important consideration in the design of a pesticide. For a pesticide to function effectively, it must reach the receptor site, where its effectiveness may depend on the geometry and dimensions of that portion of the molecule that interacts with the receptor. In nature, biological activity is generally a property that is restricted to a single enantiomer and only one isomer of a pair of optically active synthetic pesticides or pharmaceuticals will be effective. The use of screening systems, which are effective at the molecular level, is likely to reveal the superior activity of a particular enantiomer. Other isomers may react with a different receptor and cause undesirable side effects. If they are ineffective, they represent a wasteful production cost or possibly an undesirable load on the environment. In case of molecules that have more than one chiral center, the situation is more complex, and a molecule that contains n chiral centers may have 2^n stereoisomers.

Selected from: Krieger R I. Handbook of Pesticide Toxicology: Vol 1, Principles, 2nd. California: Academic Press, 2001: 95-98.

Words and Expressions

pesticide ['pestisaid] *n.* 农药，杀虫剂
pest [pest] *n.* 有害物
utilization [ˌjuːtilai'zeiʃən] *n.* 利用
calcium arsenate 砷酸钙
lead arsenate 砷酸铅
sulfur ['sʌlfə] *n.* [化] 硫黄; *vt.* 用硫黄处理
synthetic [sin'θetic] *adj.* 合成的，人造的，综合的
organic [ɔː'gænik] *adj.* 器官的，有机的，组织的
insecticide [in'sektisaid] *n.* 杀虫剂
pyrethrum [pai'riːθrəm] *n.* [植] 除虫菊，[药] 除虫菊杀虫剂
synthesize ['sinθisaiz] *v.* 综合，合成
tropical ['trɔpikl] *adj.* 热带的，热情的
malaria [mə'lɛəriə] *n.* 疟疾，瘴气
hexachlorocyclohexane [ˌheksəˌklɔːrəuˌsaiklə'heksein] *n.* [化] 六氯环己烷，六六六
gamma ['gæmə] *n.* 微克，百万分之一克
isomer ['aisəumə] *n.* 异构体
cyclodiene [ˌsaɪkləʊ'daɪiːn] *n.* 环戊二烯类杀虫剂
organochlorine [ˌɔːgənəʊ'klɔːriːn] *n.* & *adj.* 有机氯(的)；有机氯杀虫剂(的)
pharmacological [ˌfɑːməkə'lɔdʒɪkəl] *adj.* 药理学的

alkaloid ['ælkəlɔid]　*n.* [化] 生物碱，植物碱基
physostigmine [ˌfaisəu'stigmi:n]　*n.* [药] 毒扁豆碱(一种眼科缩瞳药)
Physostigma venenosum [医]　毒扁豆
ordeal [ɔ:'di:l]　*n.* 严酷的考验，痛苦的经验，折磨
cholinesterase [ˌkɔli'nestəreis]　胆碱酯酶
enzyme ['enzaɪm]　*n.* [生化] 酶
ionizable [aiə'naizəbl]　*adj.*电离的(被离子化的)
acetylcholinesterase [ˌæsitilkəuli'nestəreis]　*n.* [生化] 乙酰胆碱酯酶
carbamate ['kɑ:bəmeit]　*n.* [化] 氨基甲酸盐
carbaryl ['kɑ:bəril]　*n.* [化] 甲萘威，西维因(商品名)
nicotine ['nikəti:n]　*n.* 烟碱
organophosphorus [ˌɔ:gənəu'fɔsfərəs]　*adj.* [化]　有机磷的
tetraethyl pyrophophosphate　焦磷酸四乙酯
parathion [ˌpærə'θaiɔn]　*n.* [化] 对硫磷，一六〇五(商品名)
mammalian [mæ'meiljən]　*n.* 哺乳动物; *adj.* 哺乳动物的
toxicity [tɔk'sisiti]　*n.* 毒性
substituent [sʌb'stitjuənt]　*n.* 取代(基); *adj.* 取代的
fungicide ['fʌndʒisaid]　*n.* 杀真菌剂
parallel ['pærəlel]　*adj.* 平行的，并联的; *n.* 平行线，相似物; *v.* 平行
indoleacetic acid　[生化] 吲哚乙酸，异植物生长素
perennial [pə'renjəl]　*adj.* 四季不断的，长期的，(植物)多年生的
field trial　田间试验
nomenclature [nəu'menklətʃə]　*n.* 命名法，术语
herbicide ['hə:bisaid]　*n.* 除草剂
tolerant ['tɔlərənt]　*adj.* 容忍的，宽恕的，有耐药力的
dinitrophenol [ˌdaiˌnaitrəu'fi:nɔl]　*n.* 二硝基酚
atrazine ['ætrəzi:n]　*n.* [化] 莠去津，阿特拉津(商品名)
triazine ['traiəˌzi:n]　三嗪
manipulation [məˌnipju'leiʃən]　*n.* 处理，操纵，被操纵
eliminate [i'limineit]　*vt.* 排除，消除; *v.* 除去
categorize ['kætigəraiz]　*v.* 加以类别，分类
commercialize [kə'mə:ʃəlaiz]　*v.* 使商业化，使商品化
nematicide [ni'mætisaid]　*n. adj.* 杀线虫剂
rodenticide [rəu'dentiˌsaid]　*n.* 灭鼠剂
terminology [ˌtə:mi'nɔlədʒi]　*n.* 术语学
mitigate ['mitigeit]　*v.* 减轻
desiccant ['desikənt]　*n.* 干燥剂; *adj.* 使干燥的，去湿的

defoliant [diː'fəuliənt] *n.* 脱叶剂，落叶剂
repellent [rɪ'pelənt] *n. adj.* 排斥(的)
attractant [ə'træktənt] *n.* 引诱剂，引诱物
antioxidant ['ænti'ɔksidənt] *n.* [化] 抗氧化剂，硬化防止剂
diluent ['diljuənt] *adj.* 冲淡的，稀释的；*n.* [医] 稀释液，稀释药
formulation [ˌfɔːmju'leiʃən] *n.* 用公式表示，明确地表达，剂型
stereochemistry [ˌstiəriə'kemistri] *n.* [化] 立体化学
tetravalent [ˌtetrə'veilənt] *adj.* [化] 四价的；*n.* 四价染色体
symmetry ['simitri] *n.* 对称，匀称
asymmetric [æsi'metrik] *adj.* 不均匀的，不对称的
chiral ['tʃirəl] *adj.* [化][物] 手(征)性的
nonsuperimposable [ˌnɔnsjuːpərim'pəuzəbl] *adj.* 非重叠的
enantiomer [i'næntiəumə] *n.* [化] 对映(结构)体
diastereoisomer [ˌdaiəˌstiəriəu'aisəmə] *n.* [化] 非对映异构体
stereoisomer [ˌstiəriəu'aisəmə] [化] 立体异构术

Notes

[1] insect-borne disease: 虫源性疾病。由昆虫传播病原菌引起的疾病。

[2] lindane: 林丹。有机氯类农药，六六六的 γ 异构体，目前国家禁止使用。

[3] vector-borne disease: 媒介传播疾病。由媒介生物直接或间接传播的疾病。

[4] Diels-Alder reaction: 狄尔斯-阿尔德尔反应。指含有双键或叁键的不饱和化合物与链状或环状含共轭双键体系化合物起 1,4-加成环化反应，生成六元碳环的氢化芳香族化合物的反应。

[5] acute mammalian toxicity: 哺乳类动物的急性毒性。

[6] Ciba-Geigy Company (now Syngenta): 汽巴-嘉基公司。1996 年，诺华（Novartis）公司由两家化学品及制药公司“汽巴-嘉基”（Ciba-Geigy）和“山德士”（Sandoz）合并而成。2000 年，Novartis 与 Zeneca 公司合并为 Syngenta 公司（先正达）。

[7] carbaryl (*N*-methylnaphthyl carbamate): 甲萘威，商品名：西维因。学名甲氨基酸-1-萘酯。纯品为白色晶体。微溶于水，溶于大多数有机溶剂。

[8] USEPA: 美国环保署。成立于 1970 年 12 月，致力于发展和加强环境保护方面的政策法规管理。

[9] FIFRA: 《联邦杀虫剂、杀菌剂、灭鼠剂法案》。

[10] combinatorial chemistry: 组合化学。组合化学是一门将化学合成、组合理论、计算机辅助设计及机械手结合一体，在短时间内将不同构建模块用巧妙构思，根据组合原理，系统反复连接，从而产生大批的分子多样性群体，形成化合物库，然后运用组合原理，以巧妙的手段对库成分进行筛选优化，得到可能的有目标性能的化合物结构的科学。

Exercises

Ⅰ Answer the following questions according to the text.

1. How many chemical pesticides do you know? Please give a list as possible as you can and classify all of them according to your understanding.
2. What can be regarded as a pesticide? How to understand "Active ingredient" of a pesticide?
3. What does formulation mean? What is the purpose of formulation?
4. What is the meaning of a chiral molecule? Why is chirality an increasingly important consideration in the design of a pesticide?

Ⅱ Translate the following English phrases into Chinese.

organic pesticide	nerve poison	receptor site	screening system
insecticidal activity	practical application	physical property	copper sulfate
genetic modification	spatial arrangement	target organism	mirror image

Ⅲ Translate the following Chinese phrases into English.

除草剂	杀虫剂	杀菌剂	杀线虫剂	灭鼠剂	副作用
添加剂	稀释剂	抗氧化剂	组合化学	驱避剂	活性成分

Ⅳ Choose the best answer for each of the following questions according to the text.

1. Which were described as "nerve poisons"?

   A. fungicides B. nematicides C. organochlorine insecticides D. herbicides

2. Which of the following is not an inorganic chemical?

   A. Calcium arsenate B. Copper sulfate

   C. Lead arsenate D. parathion

3. Which of the following pesticides is acclaimed success in controlling vector-borne diseases?

   A. lindane B. DDT C. carbaryl D. paraoxon

4. Which of the following belong to pesticides?

   A. Herbicides and insecticides B. Fungicides and nematicides

   C. Rodenticides D. All of the above

5. The purpose of formulation is to____.

   A. improve the efficacy of the pesticide B. facilitate application of the pesticide

   C. ensure that the pesticides remains stable in storage D. all of the above

Ⅴ Translate the following short passages into Chinese.

1. As late as 1950, many inorganic chemicals were still in use, including calcium arsenate, copper sulfate, lead arsenate, and sulfur, but, with the exception of sulfur, these materials were almost completely displaced by synthetic organic pesticides in subsequent years.

2. "Active ingredient" means any substance (or group of structurally similar substances)

that will prevent, destroy, repel or mitigate any pest, or that functions as a plant regulator, desiccant, or defoliant within the meaning of FIFRA.

3. The purpose of formulation is to improve the efficacy of the pesticide, facilitate its application, and ensure that it remains stable in storage. Thus, additives include inert ingredients, such as wetting agents, stickers, emulsifiers, antioxidants, and diluents.

Reading Material

Pesticides, common names, chemical names, and trade names

Pesticides are chemicals specifically developed and produced for use in the control of agricultural and public health pests, to increase production of food and fiber, and to facilitate modern agricultural methods. Antibiotics to control microorganisms are not included. They are usually classified according to the type of pest (fungicides, algicides, herbicides, insecticides, nematicides, and molluscicides) they are used to control. When the word *pesticide* is used without modification, it implies a material synthesized by humans. *Plant pesticide* is a substance produced naturally by plants that defend against insects and pathogenic microbes — and the genetic material required for production.

The term *biocide* is not used much in the scientific literature. It may be used for a substance that is toxic and kills several different life-forms. Mercury salts (Hg^{2+}) may be called biocides because they are toxic for microorganisms, animals, and many other organisms, whereas DDT is not a biocide because of its specificity toward organisms with a nervous system. The word is also sometimes used as a collective term for substances intentionally developed for use against harmful organisms. In a directive from the European Community, we find the following definition:

The new Directive describes biocides as chemical preparations containing one or more active substances that are intended to control harmful organisms by either chemical or biological, but by implication, not physical means. The classification of biocides is broken down into four main groups-disinfectants and general biocides, preservatives, pest control and other biocides and these are further broken down into 23 separate categories.

Pesticides have one or more *standard name(s)* and one or more *chemical name(s)*. The different companies make products with registered *trade names*. They should be different from the standard names, but also have to be approved. The chemical industry also frequently uses a code number for its products. In Germany, for instance, old farmers still know parathion by the number *E*-605, which was used by Bayer Chemie before a standard name and a trade name were given to *O,O'*-diethyl paranitrophenyl phosphorothioate. The chemical name is often very complicated and even difficult to interpret for a chemist. The chemical formula, however, is often much simpler and may tell something about the property of the compound even to a person with moderate knowledge of chemistry.

One or more national standardization organizations and the International Organization of Standardization approve standard names. The chemical names are either according to the rules of the International Union of Pure and Applied Chemistry or according to Chemical Abstracts. The so-called Chemical Abstracts Services Registry Number (CAS-RN) is a number that makes it easy to find the product or chemical in databases from Chemical Abstracts. The standard names are regarded as ordinary nouns, but the pesticide products are sold under a trade name that is treated as a proper name with a capital initial letter.

Selected from: Stenersen J. Chemical Pesticides: Mode of Action and Toxicology. Florida: CRC Press LLC, 2004: 10-11.

Words and Expressions

facilitate [fə'siliteit] *vt.* (不以人作主语的) 使容易，使便利，推动，促进
antibiotics *n.* 抗生素，抗生学
microorganism [maikrəu'ɔ:gəniz(ə)m] *n.* [微生] 微生物，微小动植物
algicide ['ældʒisaid] *n.* [化] 除海藻的药
molluscicide [mɔ'lʌsisaid] *n.* 软体动物杀灭剂，灭螺剂(亦作 molluscacide)
pathogenic [ˌpæθə'dʒenik] *adj.* 致病的，病原的，发病的
disinfectant [disin'fekt(ə)nt] *n.* 消毒剂
preservative [pri'zə:vətiv] *n.* 防腐剂
O,O'-diethyl paranitrophenyl phosphorothioate *O,O*-二乙基对硝基苯基硫代磷酸酯
the International Union of Pure and Applied Chemistry 纯粹和应用化学国际联合会(IUPAC)
Chemical Abstract (美国)化学文摘