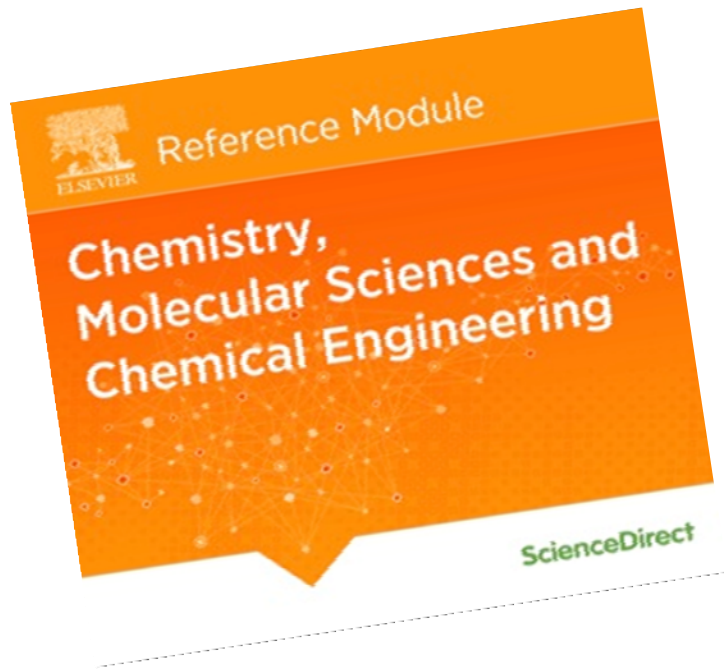
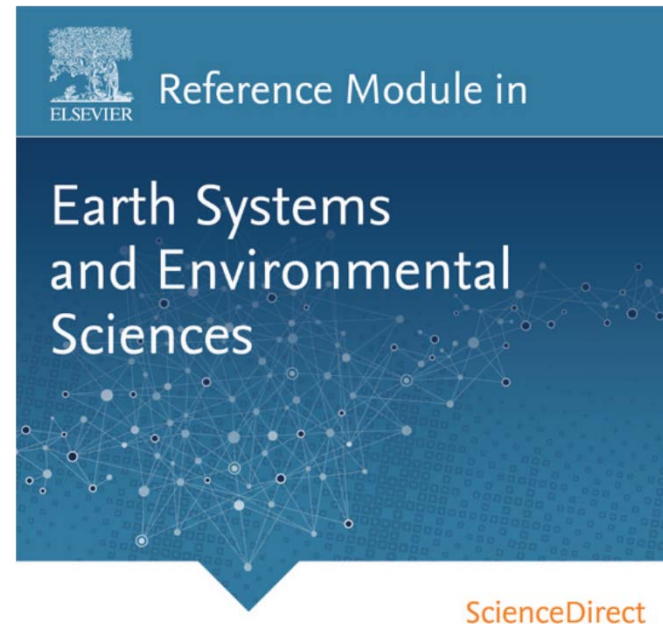


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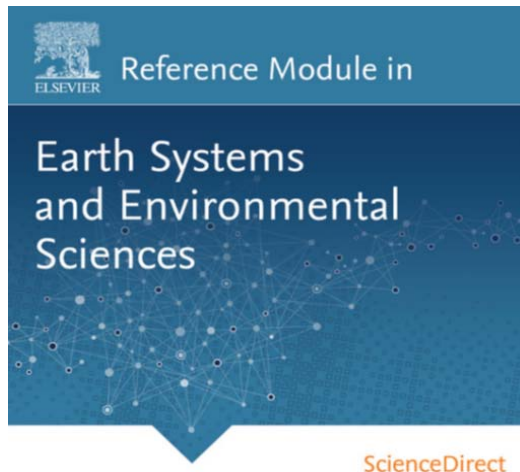
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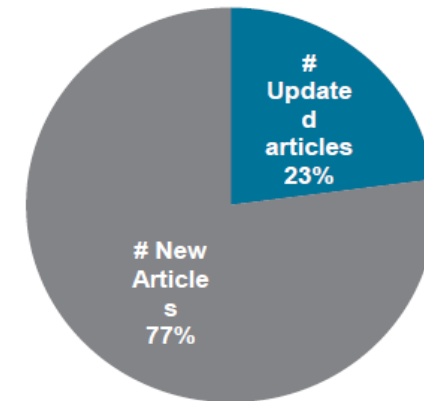
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• Encyclopedia of Quaternary Science	2
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• Treatise on Water Science	1
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Updates to Reference Module in Earth Systems and Environmental Sciences since launch:

- Reference Module published in September 2013
- **4,632** – Total articles in Reference Module as of May 2016
- **4,474** – Total currency reviews since publication
- **288** – Total updated articles since publication
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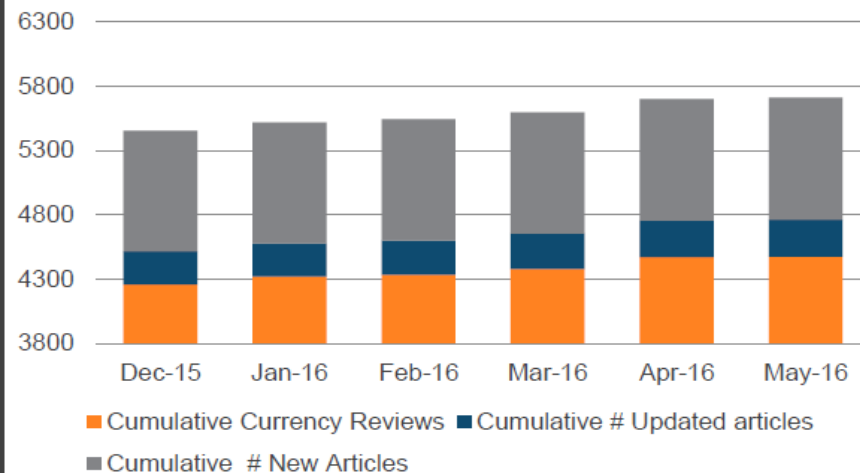
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2017

- *Encyclopedia of Sustainable Technology*
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December 2015- May 2016 reviews, updates and new articles





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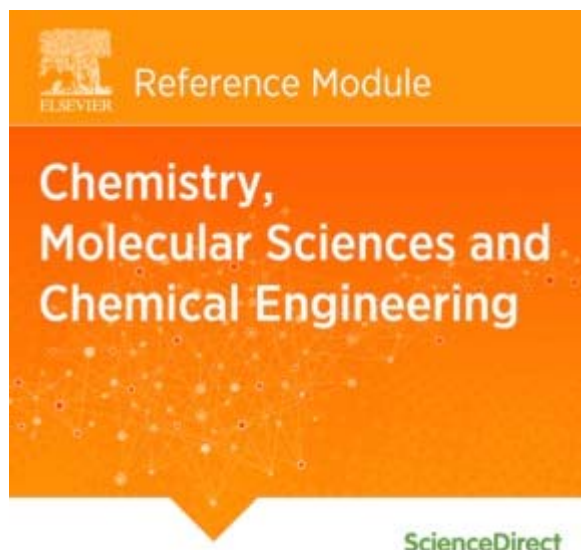
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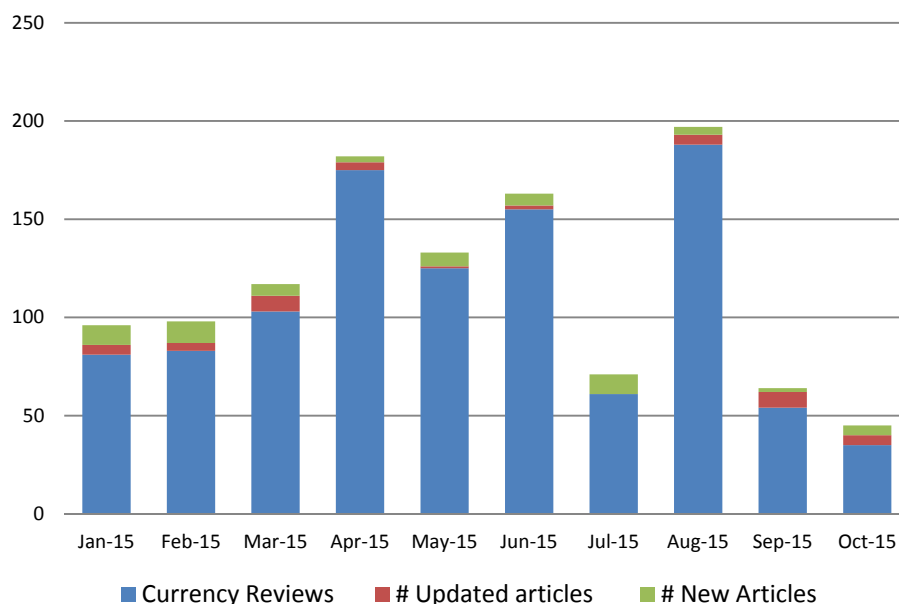
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• Comprehensive Organometallic Chemistry II	1
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• Comprehensive Sampling and Sample Preparation	1
• Comprehensive Organic Synthesis II (2014)	2

- **4,871**- Total articles in Reference Module as of October 2015
- **2,537** Total Currency Reviews
- **1060** - Total articles reviewed for currency in 2015
- **42** - Total updated articles in 2015
- **64**- Total new articles in 2015
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- Reference Module published in September 2013
- Note there are **1,809** classic articles which are not included in the review process

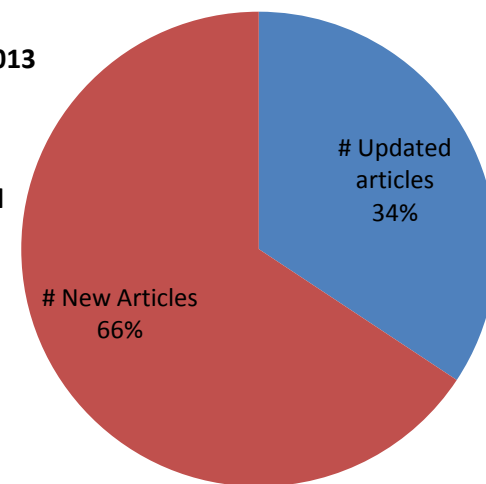
January - October 2015 reviews, updates and new articles



September 2013 – October 2015 Cumulative Updates to: Reference Module in Chemistry, Molecular Sciences and Chemical Engineering

Since launch in September 2013

- 196 articles updated
- 371 new articles added
- 2,572 have been reviewed for accuracy



Future Reference Works to be added:

2016

- *Encyclopedia of Spectroscopy & Spectrometry, 3E*

2017

- *Comprehensive Medicinal Chemistry III*
- *Comprehensive Membrane Science and Engineering, 2E*
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- *Encyclopedia of Interfacial Chemistry: Surface Science and Electrochemistry*

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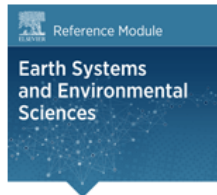
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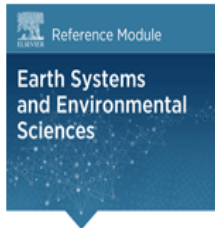
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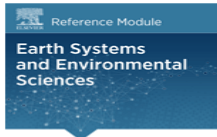
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An important type of waste is the sewage sludge generated in sewage-treatment plants. Sludge requires stabilization before its final disposal. Moreover, according to the EU directive 91/271/EC concerning sewage treatment, sludge should be reused if required, and, in this case, all necessary precautions to minimize any probable harmful effect on the environment should be taken. Sludge is a valuable source of organic matter and nutrients and, in principle, it can be used as a soil amendment. However, in general, sludge is loaded with contaminants such as pathogens, heavy metals, and xenobiotic compounds, and its final disposal to the environment may be problematic, even following conventional treatment, such as anaerobic digestion. Xenobiotics are anthropogenic compounds that have been part of widely used consumable goods and are naturally contained in the wastewater. Most xenobiotics, due to their hydrophobic nature, tend to be adsorbed on activated sludge and other suspended solids in sewage. They are

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Abstract

An important type of waste is the sewage sludge generated in sewage-treatment plants. Sludge requires stabilization before its final disposal. Moreover, according to the EU directive 91/271/EC concerning sewage treatment, sludge should be reused if required, and, in this case, all necessary precautions to minimize any probable harmful effect on the environment should be taken. Sludge is a valuable source of organic matter and nutrients and, in principle, it can be used as a soil amendment. However, in general, sludge is loaded with contaminants such as pathogens, heavy metals, and xenobiotic compounds, and its final disposal to the environment may be problematic, even following conventional treatment, such as anaerobic digestion. Xenobiotics are anthropogenic compounds that have been part of widely used consumable goods and are naturally

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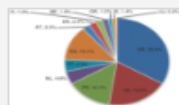


Table 1

Table 2

Table 3



Table 4

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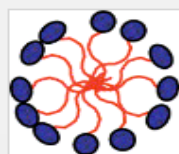


Table 10

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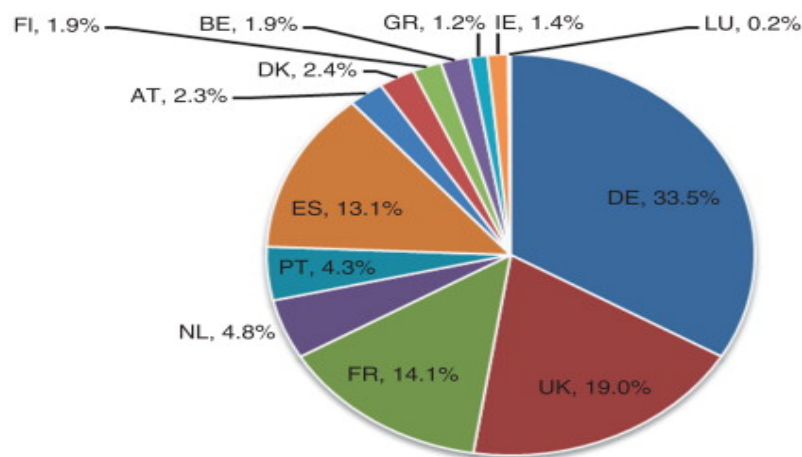


Figure 1.

Production of sewage sludge in 13 European countries during 2005 [European Topic Centre on Resource and Waste Management (ETC-RWM), Facts and figures, URL: http://scp.eionet.europa.eu/facts/wastebase/quantities/index_html/]. DE, Germany; UK, United Kingdom; FR, France; NL, Netherlands; PT, Portugal; ES, Spain; DK, Denmark; FI, Finland; BE, Belgium; GR, Greece; IE, Ireland; LU, Luxembourg.

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Sewage sludge contains organic compounds (carbohydrates, proteins, and lipids) as well as nutrients (nitrogen, phosphorus, potassium, calcium, sulfur, and magnesium) (Table 1). Because of the organic content and nutrient value, sludge can, in principle, substitute chemical fertilizers and be used as a soil conditioner.

Table 1.

Typical characteristics of various sludge types [2]

Sludge type	A	B ₁	B ₂	C	D
Dry solids (DS) (kgm ⁻³)	12	9	7	10	30
Volatile solids (VS) (% DS)	65	67	77	72	50
pH	6	7	7	6.5	7
C (%VS)	51.5	52.5	53	51	49
H (%VS)	7	6	6.7	7.4	7.7
O (%VS)	35.5	33	33	33	35
N (%VS)	4.5	7.5	6.3	7.1	6.2



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Abstract

Nitro explosives are toxic and persistent anthropogenic compounds. The recent discovery of nitro explosive-degrading biocatalysts (enzymes or redox-active biomolecules) opens new perspectives for the development and design of bioremediation systems. Ordnances contain different explosive formulations with specific mixtures of nitro explosives that are characterized by dissimilar biodegradation and transport patterns in contaminated sites. Because co-contamination is frequently observed in the field, this review presents promising biodegradation pathways for the different classes of nitro explosives and multifaceted approaches to improve and more effectively monitor the performance of a bioremediation process that must integrate

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SCOTT A. ELIAS

Scott A. Elias grew up in Colorado, USA, and received both an undergraduate degree (1976) and PhD (1980) in Environmental Biology from the University of Colorado. PhD dissertation concerned Paleoenvironmental reconstructions of Holocene insect fossil assemblages from two sites in arctic Canada. He went on to do postdoctoral fellowships at the University of Waterloo, Canada and the University of Berne, Switzerland. Scott returned to the University of Colorado in 1982, and became a research associate of the Institute of Arctic and Alpine Research. He remained there for the next 18 years, becoming a Fellow of the institute, before departing for England on a lectureship in Physical Geography at Royal Holloway, University of London, where he remains, today. Scott became Professor of Quaternary Science in 2007, following publication of the Encyclopedia of Quaternary Science that same year. He continues



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