
聲明

本檔案之內容僅供下載人自學或推廣化學教育之非營利目的使用。並請於使用時註明出處。

[如本頁取材自○○○教授演講內容]。

面對環境衛生衝擊的 化學研究規劃

陳幹男

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研究實驗設計考量

- 原料:
re-newable、non-petroleum-based, environmental benign, non-hazardous to living creatures.
- 製程:
cleaner-process: organic solvent-free, energy-saving, non-toxic emission, no waste generation.
- 能源:
紅外光、紫外光、太陽光、超音波、電子束或微波照射等。
- 應用產品:
life cycle, bio-degradable, less-energy need for applications, low migration materials release, non-toxic

原料

- Re-newable
- Non-petroleum-based
- Environmental benign
- Non-hazardous to living creatures
- Less expense to make or buy

EU REACH

- Registration, Evaluation, Authorization and Restriction of Chemical (簡稱REACH)
- 在EU REACH 法規系統中，歐盟國生產或進口化學物質一噸 / 年以上的企業都將受到法規的管制，並向歐洲化學品管理局提交了所需的注冊檔案材料。

RoHS

Restriction of the use of certain Hazardous Substances in electric and electronic product

- Pb 1000ppm
- Cd 100 ppm
- Cr+6 1000 ppm
- Hg 1000 ppm
- PPB 1000 ppm
- PBDE 1000 ppm

Heavy metals and REACH

- Diarsnic pentaoxide
- Diarsnic Trioxide
- Cobalt dichloride
- Sodium, or Potassium chromate
- Potassium, or Aluminum Dichromate

Heavy Metal Contents

Heavy metals including complexes

- Pb
- As
- Hg
- Se
- Ba
- Cr
- Cd
- Sb
- Co
- Be

Environment-related Substances to be controlled

Controlled Substances:

- Chlorinated compounds
- Brominated compounds
- Formaldehyde
- Specific benzotriazole
- Hydrofluorocarbon (HFC)
- Perfluoro carbon (PFC)
- Asbestos
- Boric acid, specific sodium borate
- 4-(1,1,3,3-tetra-methylbutyl)phenol
- N,N-dimethylacetamide (DMAC)
- Specified Azo compounds

SVHC

SVHC (Substances of Very High Concern)

Candidate list of SVHC (>0.1 wt%) for
Authorizations

by ECHA (European Chemicals Agency)

ECHA Website:

[http://echa.europa.eu/web/guest/candidate-
list-table](http://echa.europa.eu/web/guest/candidate-list-table)

SVHC

- Carcinogenic, Mutagenic or toxic to reproduction (CMRs)
- Persistent, bio-accumulative and Toxic (PBTs)
- Very persistent and bio-accumulative (vPvBs)
- Seriously and/or irreversibly damaging the environment or human health, as substances damaging the hormone system

SVHC Authorization List

Not allow

- To used
- Placed on the market
- Import to EU

Unless the company is granted an authorization

CMRs

Carcinogenic, Mutagenic or toxic to Reproduction
(CMRs)

- Formaldehyde, oligomer reaction products with aniline
- Arsenic acid
- Bis(2-methoxyethyl)ether (diglyme)
- 2,2-dichloro-4,4'-methylene dianiline (MOCA)
- N,N-Dimethylacetamide (DMAC)
- Strontium chromate
- 1,2-dichloroethane

製程設計

Cleaner-process design:

- organic solvent-free,
- energy-saving,
- non-toxic emission,
- no waste generation.

選擇反應能源

能源:

- 自行反應: 放熱反應
- 外加能源:

直接加熱

輻射源:

紅外光

紫外光

太陽光(可見光)

超音波

電子束

微波照射等。

反應產品設計

- 應用產品:

Life cycle

Bio-degradable

Less-energy need for applications

Low migration materials release

Non-toxic to living creatures

Less damage to environment

感謝

敬請指教