« Less is More » when using scavengers in API purification

Diego Rodriguez, PhD, SiliCycle

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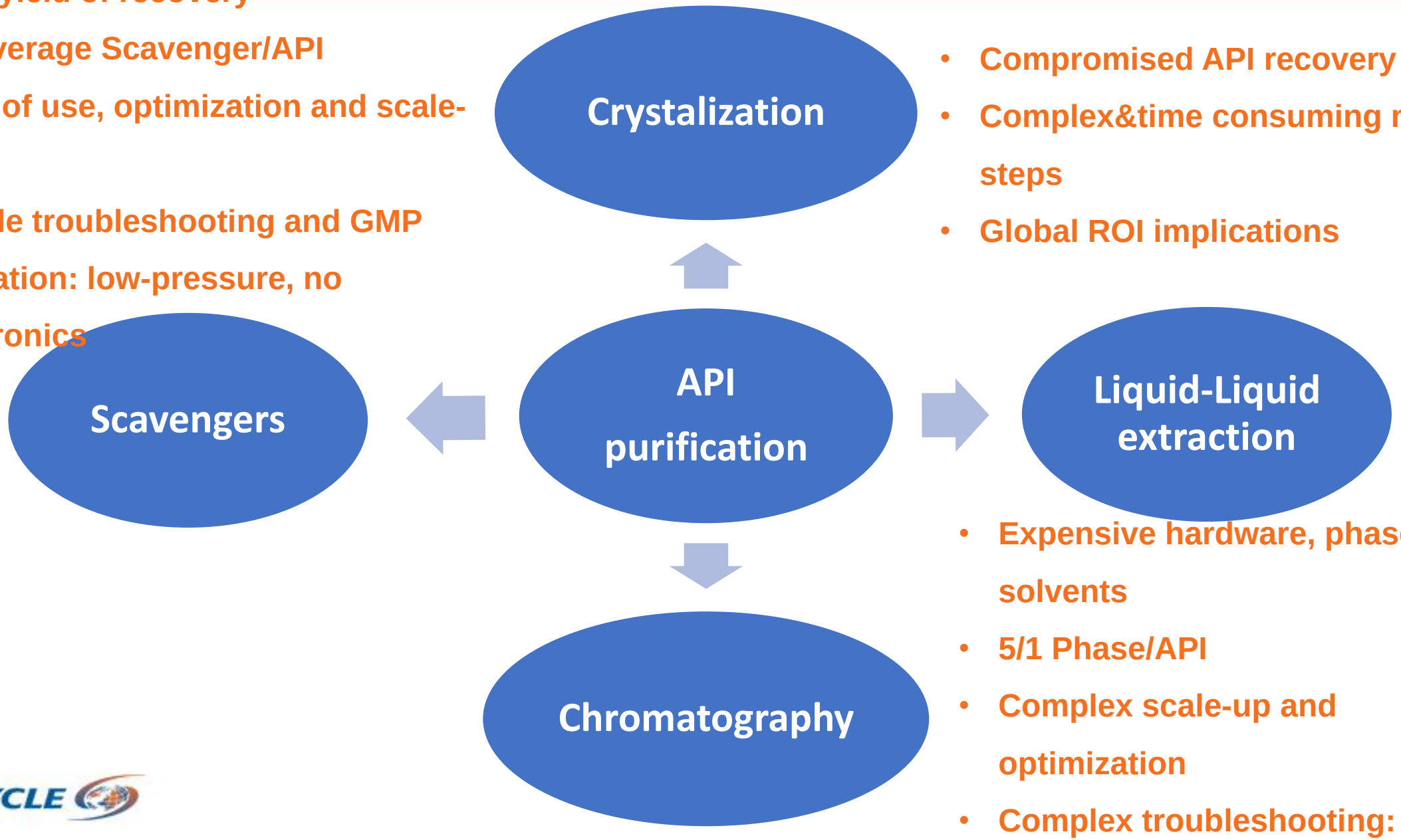
Alternatives for API impurity elimination



- High yield of recovery
- 1/5 average Scavenger/API
- Ease of use, optimization and scale-up
- Simple troubleshooting and GMP validation: low-pressure, no electronics

- Compromised API recovery yields
- Complex&time consuming multiple steps
- Global ROI implications

- Expensive hardware, phase and solvents
- 5/1 Phase/API
- Complex scale-up and optimization
- Complex troubleshooting: high

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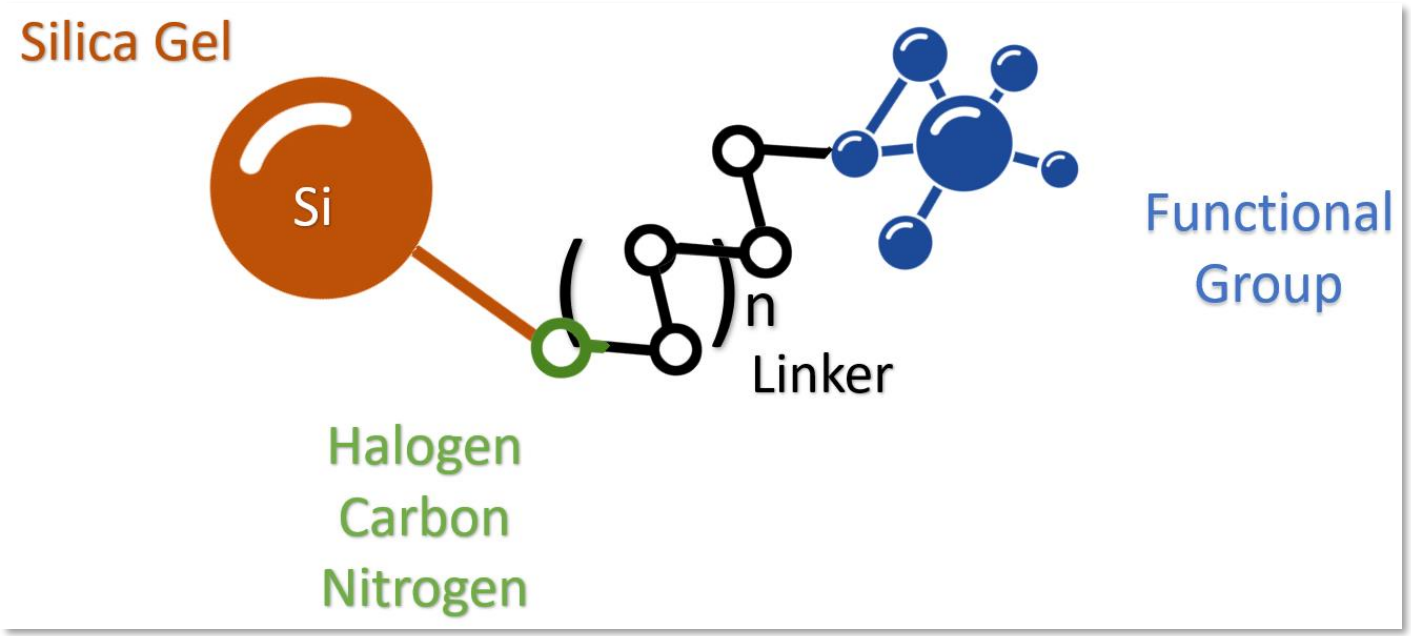
Silica grafted scavengers

- Metal Scavengers
- Organic Scavengers
- Chromatography
- Reagents
- Catalysts



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Quick impurity elimination with scavenger followed by filtration

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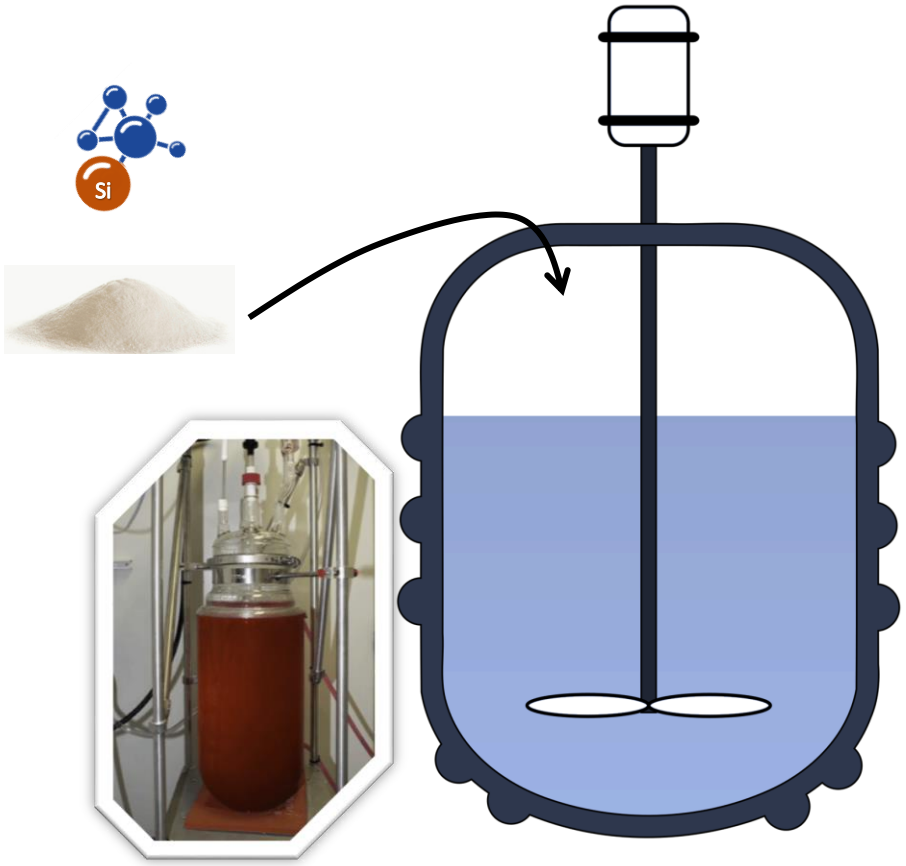
Industrial scale batch mode operation

Batch mode

(*scavengers in reactors*)



SiliaMetS®

Remaining steps :

- Filtration
- Reactor cleaning

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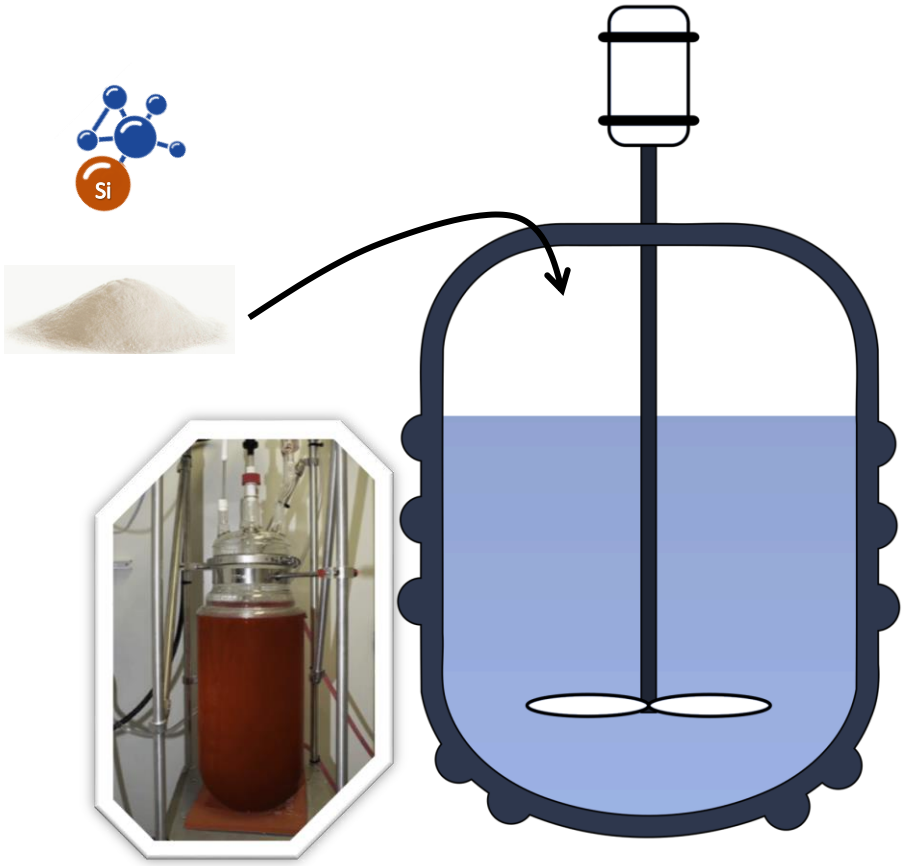
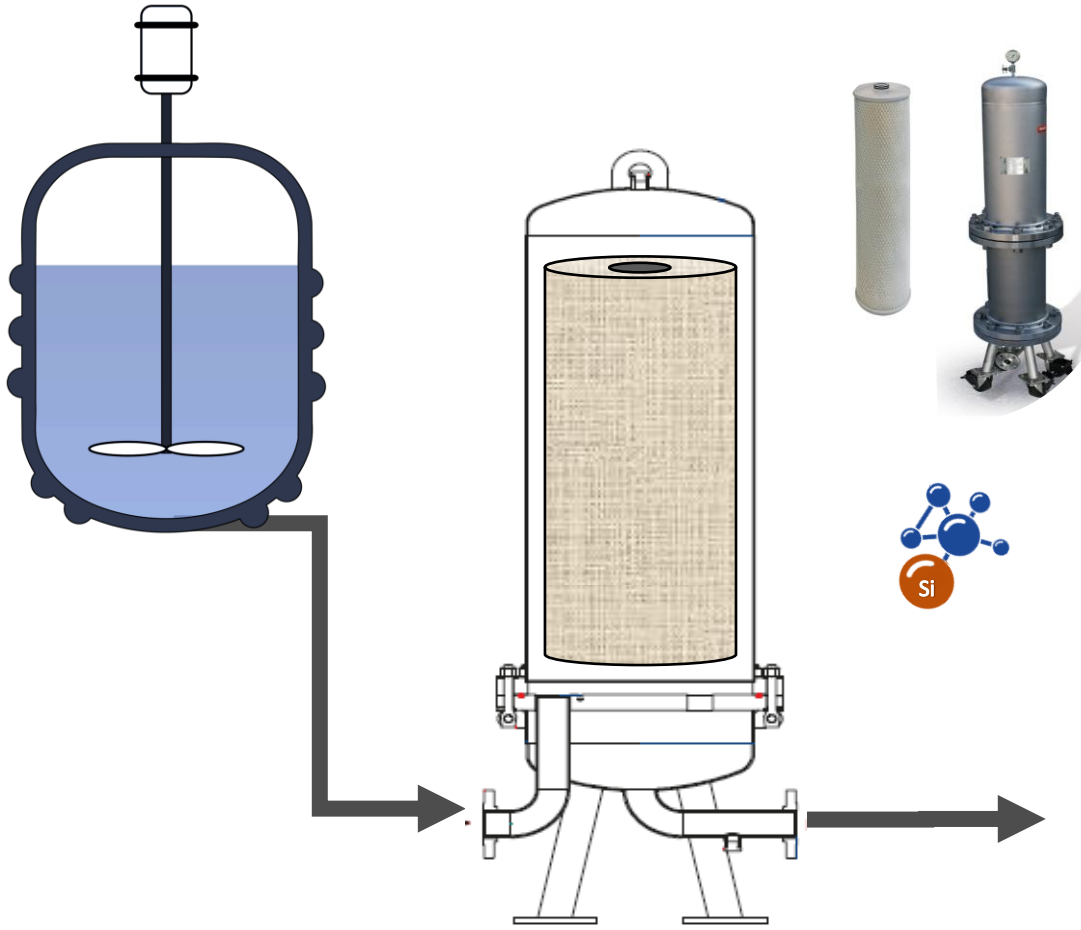
Industrial scale propietary continues flow operation

Batch mode
(*scavengers in reactors*)



Fixed bed or Flow
(*continuous processing*)



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E-PAK®

E-PAK low pressure impurity removal

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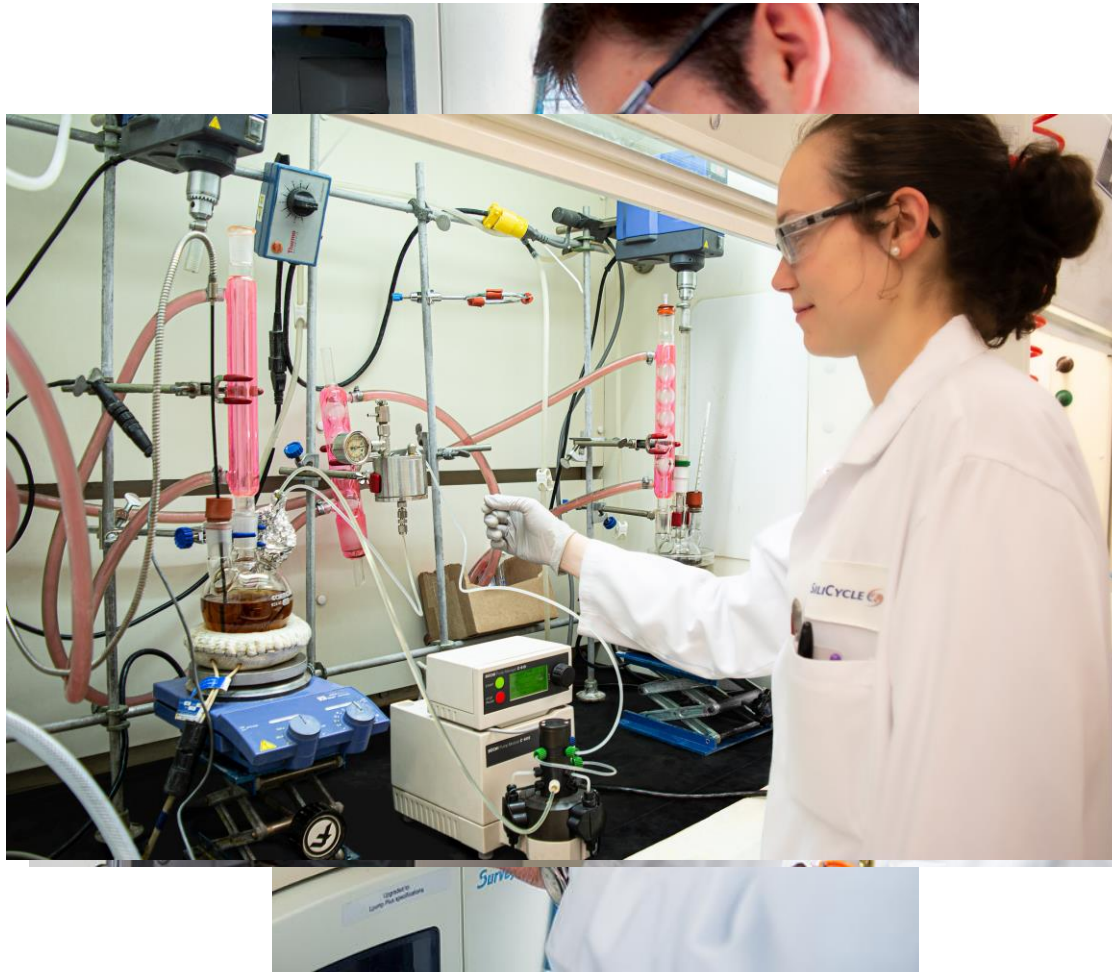
Dedicated R&D team

- 23% of employees work in R&D
- Avg of 30 R&D projects per annum
- Special projects categories:
  - Metal and organic scavenging screenings
  - Synthetic chemistry services
  - Separation center
  - Custom column packing
  - Material science
  - Analytical lab and QC



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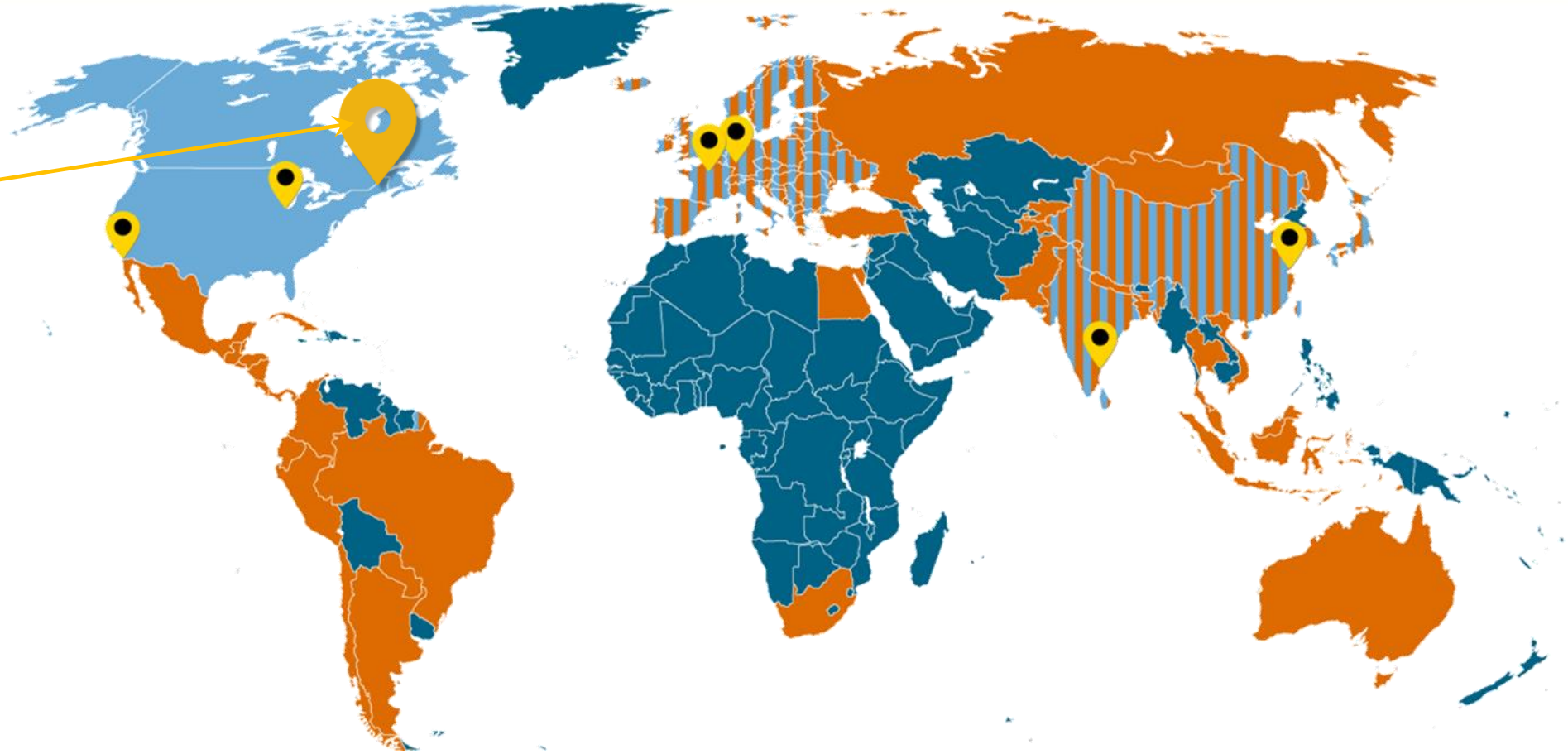
Silicycle

SiliCycle Headquarters
(Quebec City, CANADA)



SiliCycle Offices

Direct Sales House Accounts

Distributors / Stocking Capability

Direct Sales Force

SILICYCLE

Quality management system

- Stringent ISO 9001:2015 procedures followed
- >100 successful audits

Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs
Québec

Québec, le 30 avril 2013

CERTIFICAT D'AUTORISATION
Loi sur la qualité de l'environnement
(RLRQ, chapitre Q-2, article 22)

Silicycle inc.
2500, boulevard du parc Technologique
Québec (Québec) G1P 4S6

N/Réf. : 7610-03-03832-01
N/Doc. : 401013234

BNQ
Bureau de normalisation du Québec
BNQ is a member of the National Standards System (NSS)

CERTIFICATE

Certificate No.: 37977-1-09
Initial certification date: October 31, 2007
Issuance date: March 25, 2020
Expiry date: April 1, 2023

The Bureau de normalisation du Québec (BNQ) certifies that the quality management system implemented by:

SILICYCLE INC.

COVERING THE FOLLOWING ACTIVITIES:

Design, manufacture and sale of products and services from technological platforms in materials chemistry, notably silica; in organic synthesis; in extraction and purification of molecules of interest from biomass and manufacture of finished products

CARRIED OUT AT THE ADDRESSES:

Head office: 2500, boul. du Parc technologique, Québec (Québec) G1P 4S6
2665, avenue Dalton, Québec (Québec) G1P 3S8

has been assessed and found to comply with the requirements of:

ISO 9001:2015

Isabelle Landry, Director of Operations
Bureau de normalisation du Québec

IAF

The validity of the certificate may be verified at the address www.bnq.qc.ca/fr/clients-certifies.html

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