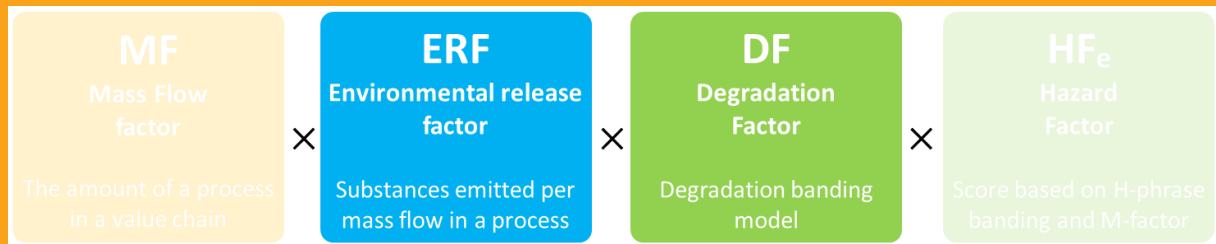


Key Feature 2:

ProScaleE release and environmental fate factors

Athanasios Gkrillas, Dow Inc, 31/05/2024



What is biodegradation?

Is when items (including natural and man-made chemicals) “breakdown” into smaller parts by natural processes i.e., bacteria, fungi or other biological means.

In general, microbial transformation is the main mechanism by which an organic chemical can be completely mineralised.

Including biodegradation in ProScaleE

Biodegradation factors

Readily	0.01
Inherently	0.1
Persistent	1
Very persistent	

Examples

Substance	Class determining H-phrase	M-factor	Hazard class	Updated H-score	Biodeg. Classification	Biodeg factor	PNEC freshwater	ProScale-E Hazard factor
Nonan-1-ol	H411		C	100	Readily biodeg	0.01	0.04	1
Bisphenol A	ED		E	100000	Readily biodeg	0.01	0.023	1000
MIT	H410	M= 100	D	10000	Not biodeg	1	0.00339	10000

Next step: inclusion of Environmental releases

ERC	Title of contributing scenario	Release to air	Release to water (before STP)	Release to soil
1	Manufacturing	5%	6%	0.01%
2	Formulation	2.5%	2%	0.01%
4	Use of non-reactive processing aid at industrial site (i.e. cleaning)	100%	100%	5%
8A	Widespread uses of non-reactive processing aid i.e lubricants	100%	100%	n.a.

Examples: Under construction



Using the Manufacturing scenario (ERC 1) and assuming the use of 1kg/day

Substance	Updated H-score	Biodeg. Classification	Biodeg factor	ProScale-E Hazard factor	ProScale-E water	ProScale-E air	ProScale-E soil
Nonan-1-ol	100	Readily biodeg	0.01	1	0.06	0.05	1E-4
Bisphenol A	100000	Readily biodeg	0.01	1000	60	50	0.1
MIT	10000	Not biodeg	1	10000	600	500	1

Possible next steps



- Inclusion of physchem info; i.e., water solubility, vapour pressure, partition coefficient
- User could refine the releases with SPERCs (Specific environmental release categories) from respective association at the ECHA use library

What it could look like



By adding also physchem information the ProScale E scores the manufacturing scenario can be further refined using PECs (mg/L)

Substance	Updated H-score	Biodeg. Classification	Biodeg factor	ProScale-E Hazard factor	ProScale-E freshwater	ProScale-E Marine water	ProScale-E agricultural soil	ProScale E air
Nonan-1-ol	100	Readily biodeg	0.01	1	3.12E-4	3.12E-5	0.016	0
Bisphenol A	100000	Readily biodeg	0.01	1000	2.8	0.28	5.1	0
MIT	10000	Not biodeg	1	10000	30	3.03	1.3	0



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