

**CHEMICAL RISK ASSESSMENT
ACCORDING TO THE EUROPEAN
REGULATION : CONCEPTS,
METHODOLOGY AND ENVIRONMENTAL
QUALITY STANDARDS (EQS - NQE)**

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MARINE ECOLOGICAL RISK

Fishing



Habitat Destruction



Chemical Pollution



Invasive Species



Climate Change



Natural Extreme Events



CHEMICAL SUBSTANCES IN THE EU

- ± 100 000 substances are used in the European Community,
- 60 000 substances are widespread in the environment,
- 30 000 substances are considered by the REACh regulation,
- 3 000 substances whose environmental impact is ± documented,
- 132 hazardous substances (76/464/CE Directive),
- 41 priority substances and priority hazardous substances (WFD 2000/60/CE),
- 27 priority action substances (OSPAR).

CHEMICAL POLLUTION AND ENVIRONMENTAL RISK ASSESSMENT (ERA)

The EU promoted several environmental regulations to protect ecosystems and human health:

Water Framework Directive (2000),

REACH Regulation (2006),

Marine Strategy Directive (2008),

Regulations based on an Environmental Risk Assessment (ERA) with a common european methodological guide: the Technical Guidance Document (TGD).

TGD: THE EUROPEAN METHODOLOGY FOR ENVIRONMENTAL RISK ASSESSMENT (ERA)

- for the chemical industry to give evidence that new substances show no risk for the ecosystems and the human health (*European Regulation on Chemicals: REACH*)
- for the assessment of Environmental Quality Standards (EQS) that help to classify water bodies in good or bad chemical status. (*Water Framework Directive, Marine Strategy Directive*)

CHEMICAL RISK ASSESSMENT

$$\text{RISK} = \frac{\text{exposure}}{\text{effects}}$$

PEC *PNEC*

PEC (Predicted Environmental Concentration) is **measured** (chemical analysis) or **calculated** (modelling, calculation from production to uses)

PNEC (Predicted No Effect Concentration in water) is extrapolated from toxicological data

CHEMICAL RISK ASSESSMENT

$$\text{RISK} = \frac{\text{exposure}}{\text{effects}}$$

PEC *PNEC*

if **PEC/PNEC** > 1 = unacceptable risk for the environment = risk reduction strategy (limitation of uses, ban)

if **PEC/PNEC** < 1 = no risk for the environment

ENVIRONMENTAL QUALITY STANDARD (EQS)

NORME DE QUALITE ENVIRONNEMENTALE (NQE)

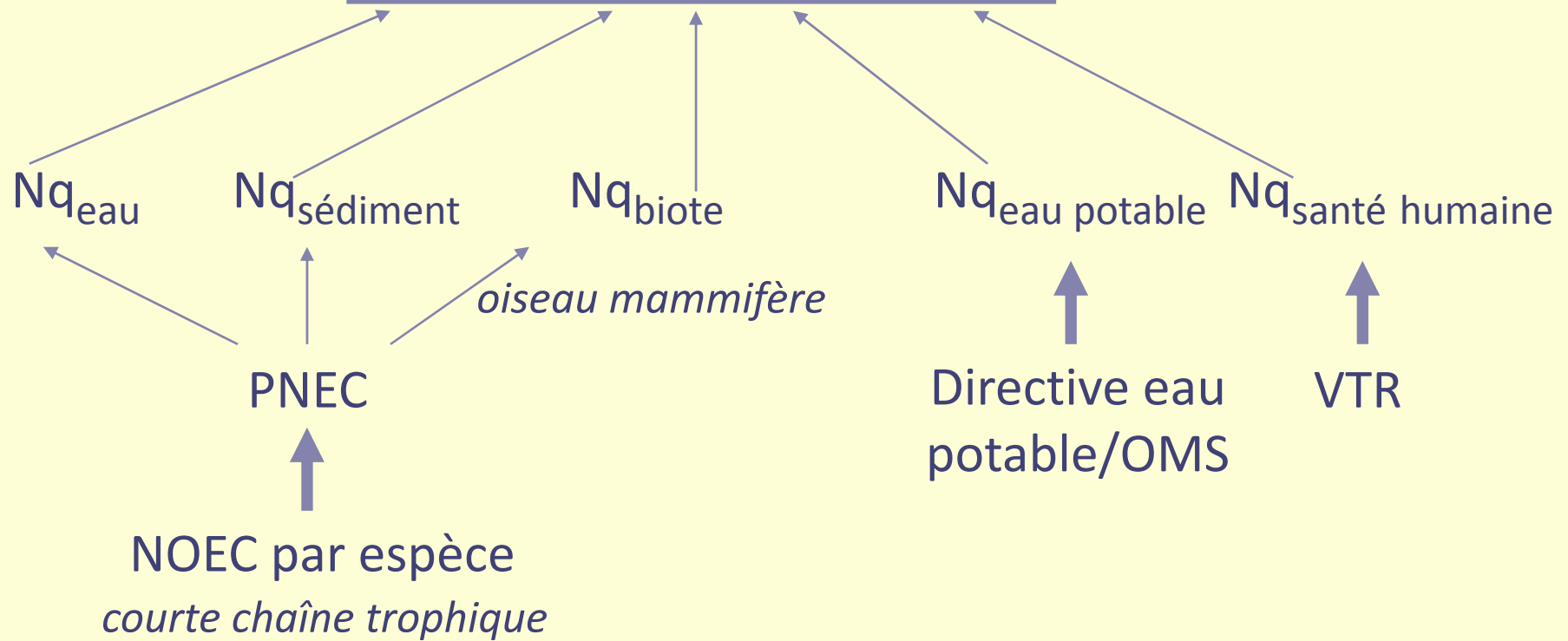
Environmental Quality Standards are thresholds which, if exceeded, could result in adverse effects on ecosystems and human health.

Selon la DCE, la **NQE** est définie comme la « concentration d'un polluant dans l'eau qui ne doit pas être dépassée, afin de protéger la santé humaine et l'environnement ».

ENVIRONMENTAL QUALITY STANDARD (EQS)

NORME DE QUALITE ENVIRONNEMENTALE (NQE)

NQE d'une substance donnée



ENVIRONMENTAL QUALITY STANDARD (EQS)

NORME DE QUALITE ENVIRONNEMENTALE (NQE)

NQE atrazine = 0.6 µg / L

0.6 µg / L

1.12 µg / Kg

s.o

< 1 µg / L

s.o

Nq_{eau}

Nq_{sédiment}

Nq_{biote}

Nq_{eau potable}

Nq_{santé humaine}

oiseau mammifère

PNEC VTR

NOEC par espèce

courte chaîne trophique

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merci de votre attention...

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