Applying a qualitative methodology to the estimation of the risk associated with the spreading of manure and digestate contaminated with *Clostridium botulinum* (type D)

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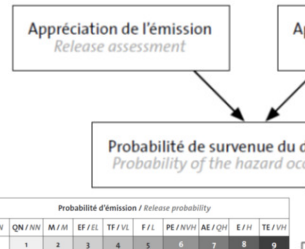
Background

An outbreak of botulism (*Clostridium botulinum* type D) in cattle has occurred in a holding using manure in its biomethanisation plant. The byproduct of the biomethanisation process is usually used as fertilizer on both arable and grass lands. The Scientific Committee instituted by the FASFC (SciCom) has been requested to evaluate the animal health risks associated with the spreading of manure or digestates contaminated with *Clostridium botulinum* toxinotype D. Specific questions have been formulated.

Methods

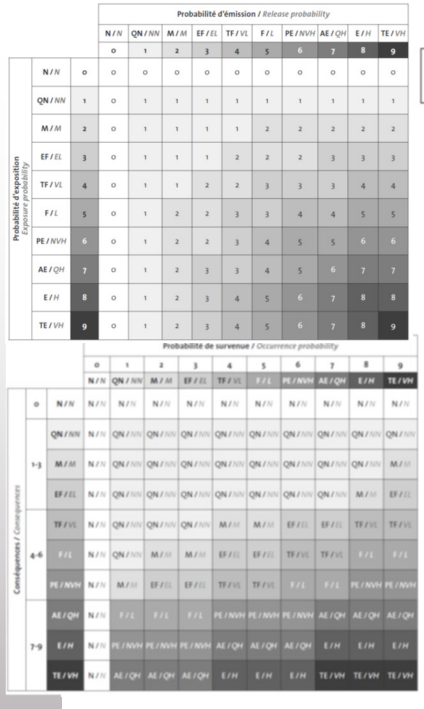
A qualitative assessment of the risk associated with the spreading of manure (scenario 1) and digestates (scenario 2) contaminated with *C. botulinum* type D was carried out in accordance with the methodology recommended by ANSES (2008) and the principles of the Import Risk Analysis of the OIE (2004). According to, four of the working group's experts were requested to submit a rating (from 0 to 9, Table below) supported by literature evidences for:

- the **probability of release** and the **probability of exposure** (subsequently combined into the **probability of occurrence)**
- The **consequences** (sums of ratings for the health and economic consequences for one herd + the spreading capabilities of the disease/hazard between herds + the cumulative consequences for animal health ; rating from 0 to 3 for each, Σmax = 9)



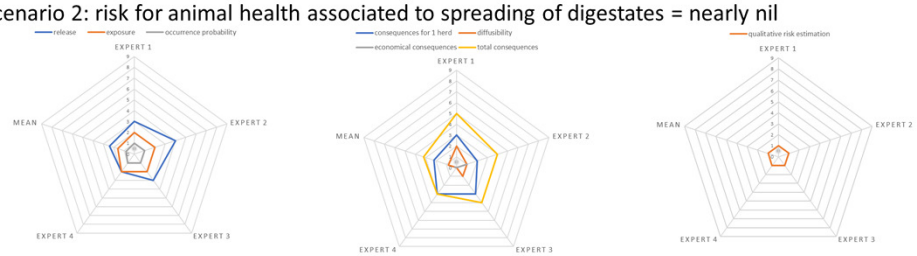
Niveau des conséquences cumulées *Level of cumulative consequences*	Qualificatif *Qualifier*
0	Nul (N) / *Nil (N)*
1	Quasi nul (QN) / *Nearly Nil (NN)*
2	Minime (M) / *Minute (M)*
3	Extrêmement faible (EF) / *Extremely Low (EL)*
4	Très faible (TF) / *Very Low (VL)*
5	Faible (F) / *Low (L)*
6	Peu élevé (PE) / *Not Very High (NVH)*
7	Assez élevé (AE) / *Quite High (QH)*
8	Élevé (E) / *High (H)*
9	Très élevé (TE) / *Very High (VH)*

Note / *Note*	Correspondance qualitative / *Qualitative correspondence*
0	Les conséquences pour le critère sont estimées nulles *The consequences for the criterion are estimated as nil*
1	Les conséquences pour le critère sont estimées faibles *The consequences for the criterion are estimated as low*
2	Les conséquences pour le critère sont estimées moyennes *The consequences for the criterion are estimated as medium*
3	Les conséquences pour le critère sont estimées élevées *The consequences for the criterion are estimated as high*



Scenario 1: risk for animal health associated to spreading of manure = nearly nil

Scenario 2: risk for animal health associated to spreading of digestates = nearly nil



Conclusions

Literature data on emission, exposure, and their consequences suggest that the spread of manure or a digestate contaminated with *C. botulinum* toxinotype D potentially increases the concentration of spores in the cattle environment. This does not lead directly to an increased risk of intoxication (ingestion and then absorption of preformed toxins). The risk was therefore estimated by the SciCom as **very low** in the two considered scenarios (spreading of manure or digestate). The main identified uncertainties relate to the reduction values (D) of *C. botulinum* spores toxinotype D (or C) depending on the biomethanisation conditions.

References

Anses, 2008.Une méthode qualitative d'estimation du risque en santé animale.
OIE, 2004. Handbook on import risk analysis for animals and animal products – introduction and qualitative risk assessment, 57p.
SciCom, 2017. Risque associé à l'épandage de fumiers et de digestats contaminés par Clostridium botulinum (dossier SciCom 2017/04)