

NSA NETWORK May 23rd 2012

STUDY ON ACCIDENT PROBABILITY IN MARSHALLING YARDS

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Ministère de l'Écologie, du Développement durable,
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SUMMARY

- LEGAL SITUATION IN FRANCE: obligation for a risk analysis
- PRINCIPLES OF RISK ANALYSIS IN THAT CONTEXT
- LEGAL CONSEQUENCES AND PROBLEMS
- BETTER ESTIMATION OF RISK AS A POSSIBLE SOLUTION
- SCOPE OF THE STUDY
- HELP EXPECTED
- EXPECTED BENEFITS

• LEGAL SITUATION IN FRANCE

- ENVIRONMENT CODE art L551-2:
 - Any transport infrastructure where a big concentration of dangerous goods vehicles may be temporarily stopped is subject to a risk analysis
 - The Infrastructure manager is responsible for sending the risk analysis to the local authorities (Préfet)
 - Concerns:
 - 19 road parkings
 - 4 marshaling yards
 - 4 inland harbors
 - 21 maritime harbors

•PRINCIPLES OF RISK ANALISYS

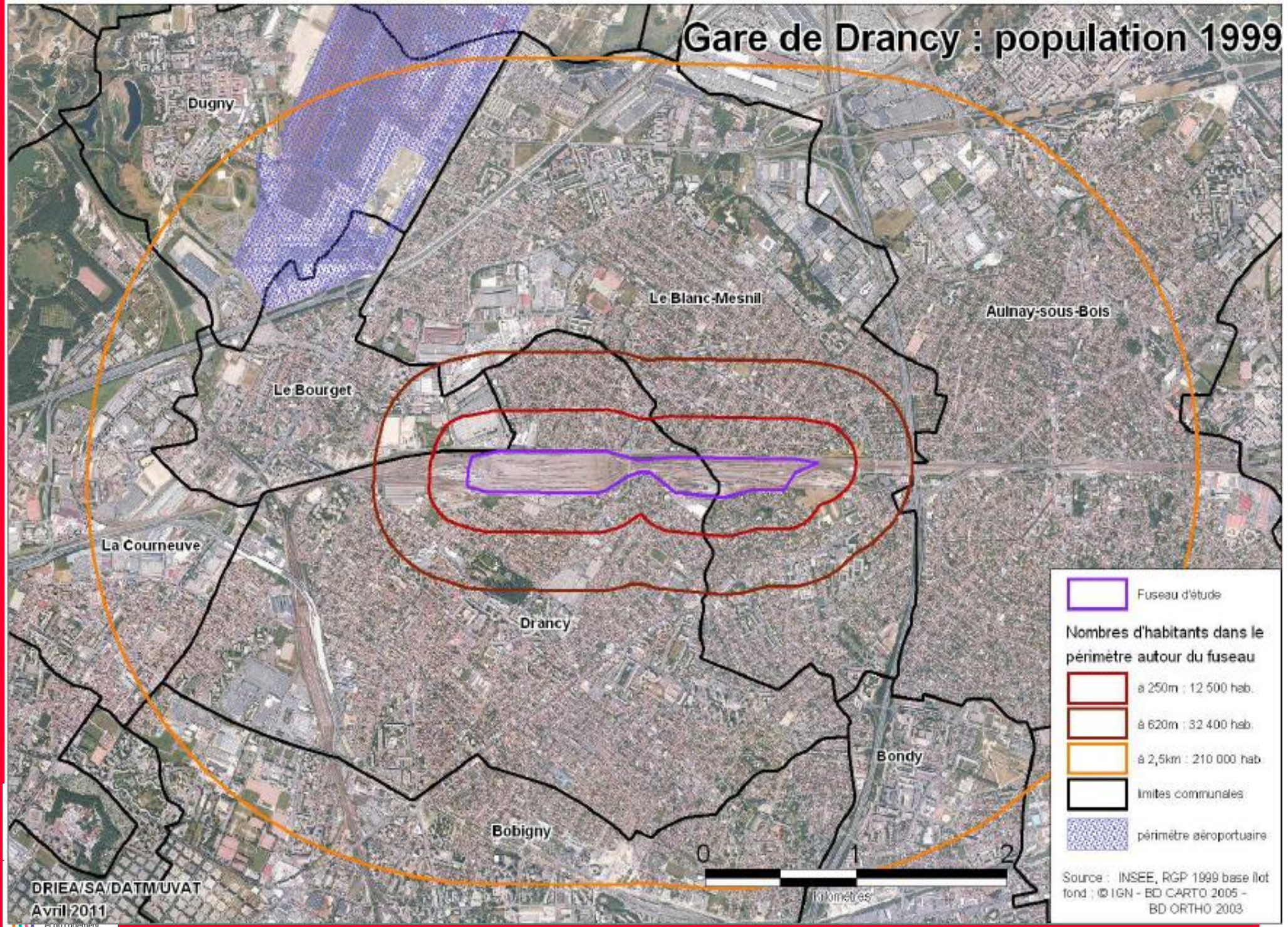
- Asses the probability and the gravity (amount of exposed population)
- 6 phenomena (explosion, BLEVE, UVCE, pool fire, torch fire, toxic cloud)
- Decision matrix

Nombre de personnes exposées aux effets létaux significatifs	PROBABILITÉ* (sens croissant de E vers A)				
	E	D	C	B	A
Au moins 100 000	Red	Red	Red	Red	Red
Au moins 10 000	Orange	Red	Red	Red	Red
Au moins 1 000	Light Green	Orange	Orange	Orange	Red
Au moins 100	Light Green	Light Green	Light Green	Light Green	Orange
Au moins 10	Light Green	Light Green	Light Green	Light Green	Orange
Au moins 1	Light Green	Light Green	Light Green	Light Green	Light Green
Aucune	Light Green	Light Green	Light Green	Light Green	Light Green

•LEGAL CONSEQUENCES AND PROBLEMS

- If the result of risk assessment is in a non acceptable range there are 3 possibilities:
 - Improving infrastructure safety through operational measures (not covered by RID/ADR)
 - Traffic restrictions under 1.9
 - Building restriction
- According to some results large amount of population around marshaling yards may be exposed to lethal effects. The associated probabilities have been estimated as being too high to be accepted (over 10^{-5})
- As a result some marshaling yards especially are subject to acceptance issues.

Gare de Drancy : population 1999



-  Fuseau d'étude
- Nombres d'habitants dans le périmètre autour du fuseau**
-  à 250m : 12 500 hab.
-  à 620m : 32 400 hab.
-  à 2,5km : 210 000 hab.
-  limites communales
-  périmètre aéroportuaire

Source : INSEE, RGP 1999 base lot
fond : © IGN - BD CARTO 2005 -
BD ORTHO 2003

DRIEA/SA/DATM/UVAT
Avril 2011

• BETTER ESTIMATION OF RISK AS A POSSIBLE SOLUTION

- Estimate of effect is deemed to be reasonably good from technical and scientific points of view
- Improvement can be expected on the side of probability estimation.
- It has been decided to verify the reliability of the probability estimation method and elaborate a more suitable method before being driven to make dramatic decisions.

SCOPE OF THE STUDY

- 1) Study the greatest number of accidents available related to relevant traffic data (improved basic probability calculation through frequency approach)
- 2) Identify places in marshaling yards where accident are more likely to happen (to better define risk perimeter)
- 3) Identify aggravations factors in TDG accidents
- 4) estimate the probability for basic traffic accident to become a major TDG accident
- 5) analyze comparable work done in other States. And see how they can be adapted to our situation
- 6) Propose a method for calculating accident probabilities according to the best current data and knowledge in particular those associated to the 6 dangerous event listed.

HELP EXPECTED

To be accurate the study needs to be based on the maximum reliable data available (accidents and traffic)

Once the body responsible for conducting it is chosen (the call for Tender has been launched 7th May), we would invite National safety authorities and Agencies as well as ERA to help gathering the data, by making them available as far as they may be published.

ERA is invited as well to support this initiative.

EXPECTED BENEFITS

Having an up to date method for evaluating accidents probabilities

Probably solving some acceptance issues because some high probability values are cause by approximation approaches (approximation leads to over estimate to stay on the safe side)

Being paid by public founds there would be no problems to publish the results and make them available for the benefit of other authorities or NSA.

These results may serve as a basis for ERA in its work on risk acceptance mandated by the European Commission

THE END

THANKS

FOR YOUR

ATTENTION



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