



Brussels, 22.1.2014  
SWD(2014) 21 final

PART 3/4

**COMMISSION STAFF WORKING DOCUMENT**

**IMPACT ASSESSMENT**

*Accompanying the document*

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN  
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL  
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**Exploration and production of hydrocarbons (such as shale gas) using high volume  
hydraulic fracturing in the EU**

{COM(2014) 23 final}  
{SWD(2014) 22 final}

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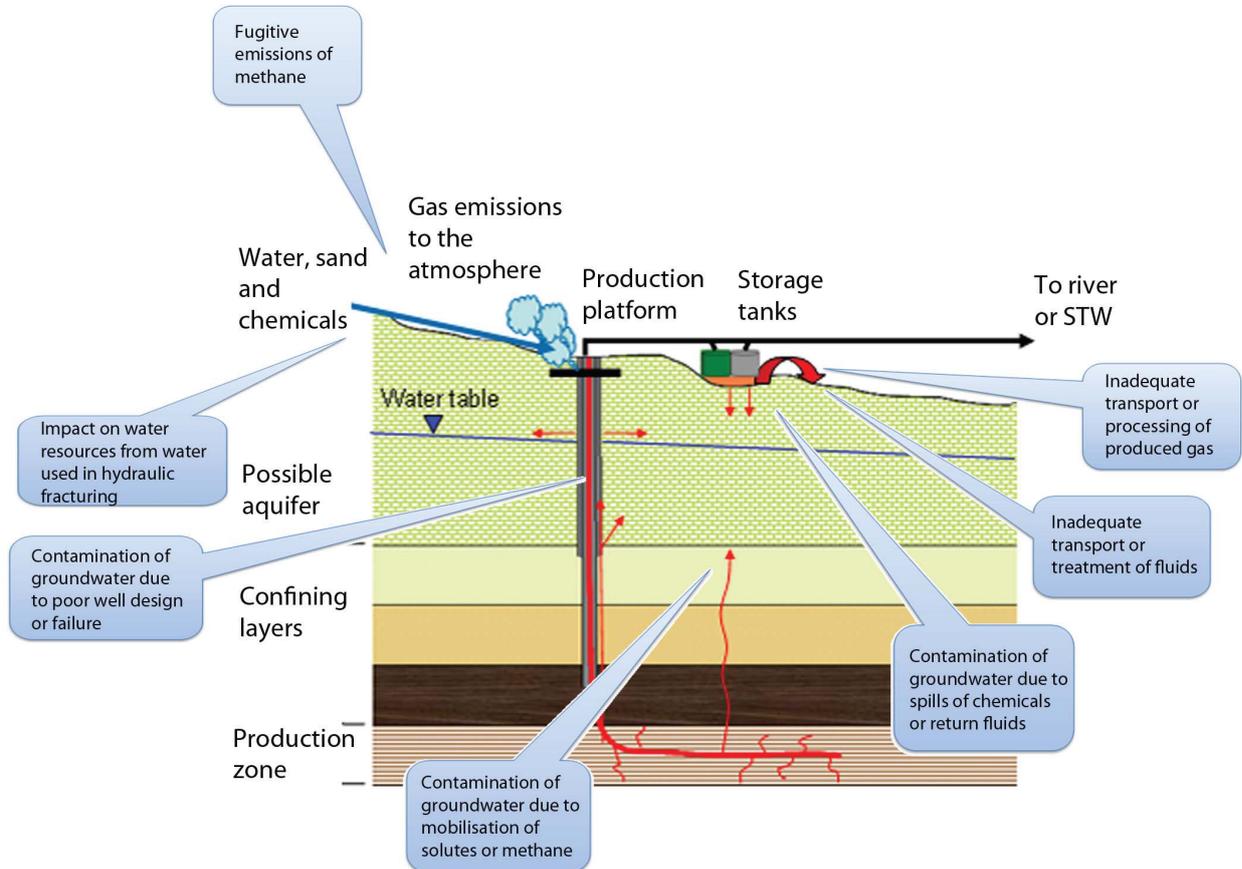
4.1. General impacts pathways

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4.3. RFF risks pathways

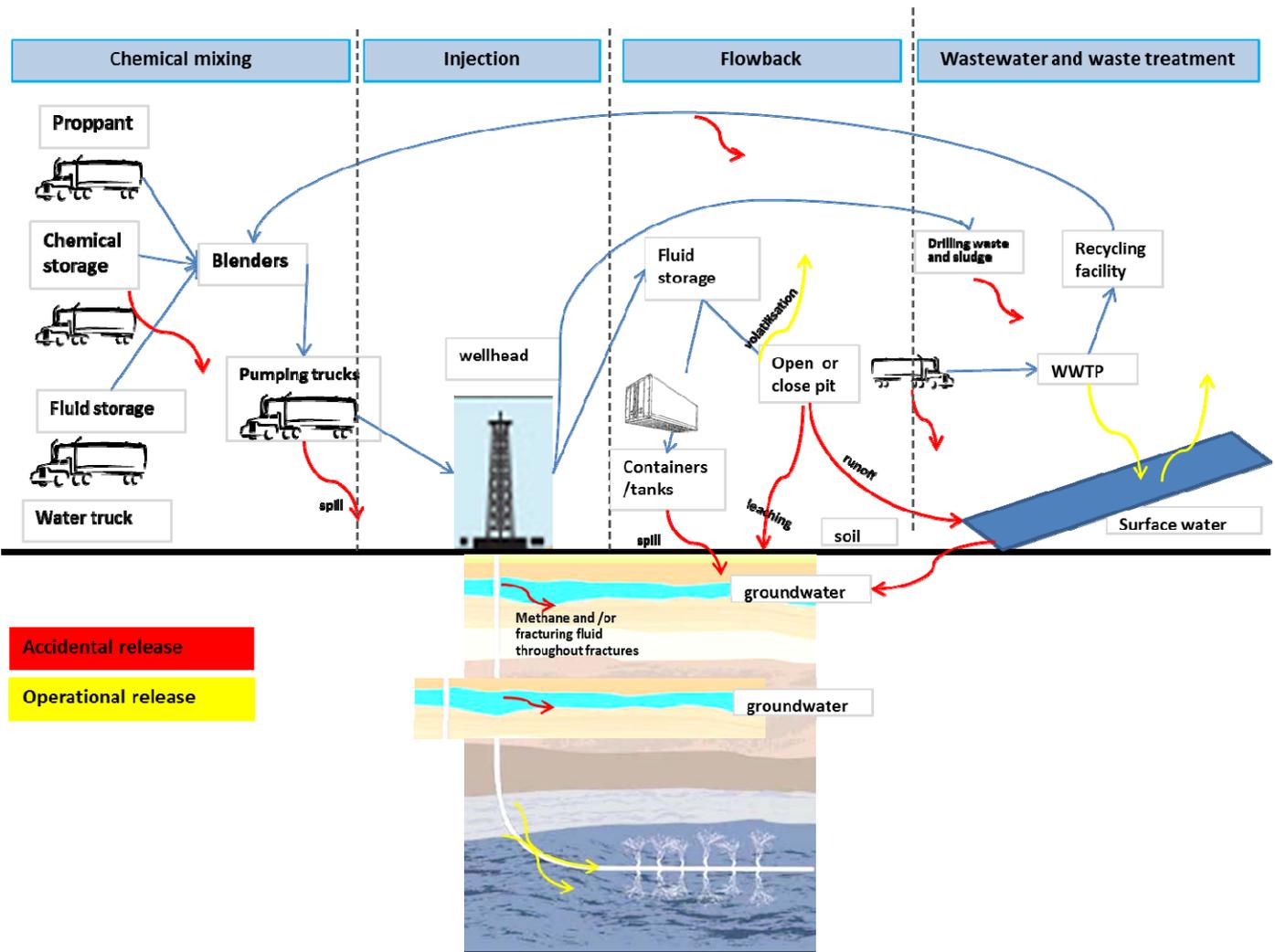
## ANNEX 4. ENVIRONMENTAL IMPACT PATHWAYS

### 4.1 General impacts pathways



Source: Pollutant pathways associated with hydraulic fracturing. Source: Adapted from Environment Agency (England) (2013) © Environment Agency right

## 4.2 Chemicals' pathways

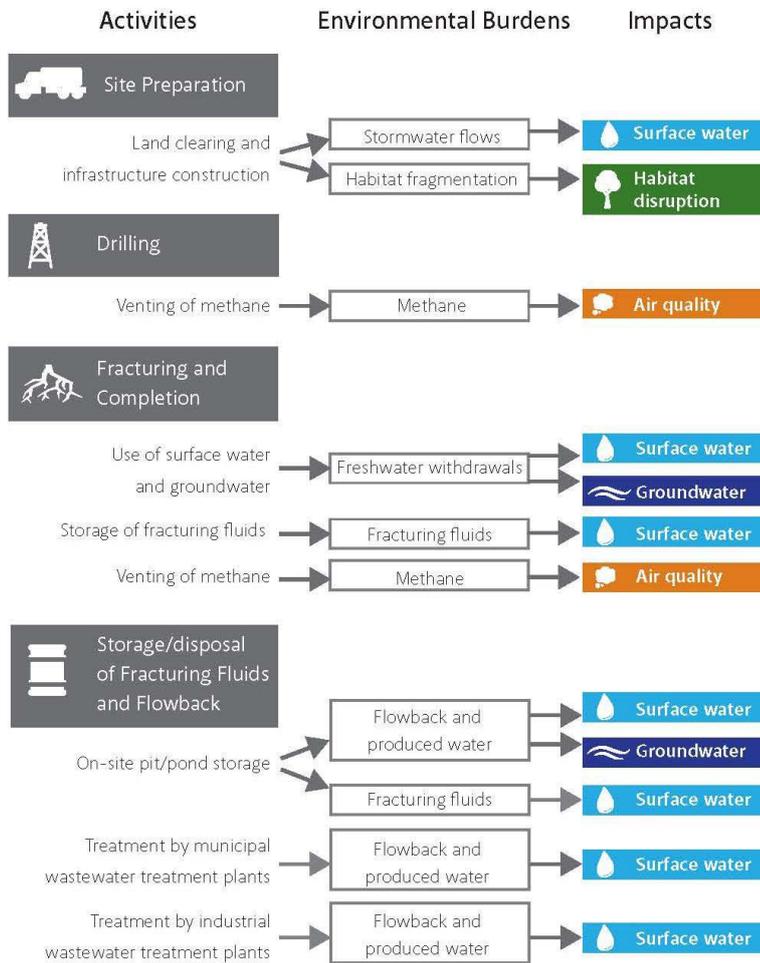


Source: "Spatially-resolved Assessment of Land and Water Use Scenarios for Shale Gas Development: Poland and Germany", JRC IES, forthcoming

### 4.3. RFF risks pathways

Source: RFF report, Pathways to Dialogue What the Experts Say about the Environmental Risks of Shale Gas Development, Alan Krupnick, Hal Gordon, and Sheila Olmstead, 2013 (accessible at: [http://www.rff.org/Documents/RFF-Rpt-PathwaystoDialogue\\_FullReport.pdf](http://www.rff.org/Documents/RFF-Rpt-PathwaystoDialogue_FullReport.pdf))- RFF retains copyright on this figure.

#### ROUTINE RISK PATHWAYS



#### ADDITIONAL ROUTINE RISK PATHWAYS IDENTIFIED BY TOP EXPERTS



#### ACCIDENT RISKS PATHWAYS

