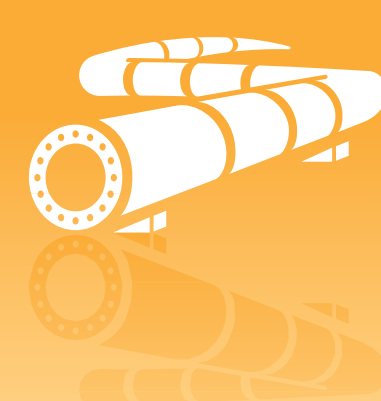


COPEX 2014

CONCAWE Oil Pipeline Operators Experience Exchange Seminar

Brussels, 3–4 April 2014



Performance of European cross-country pipelines

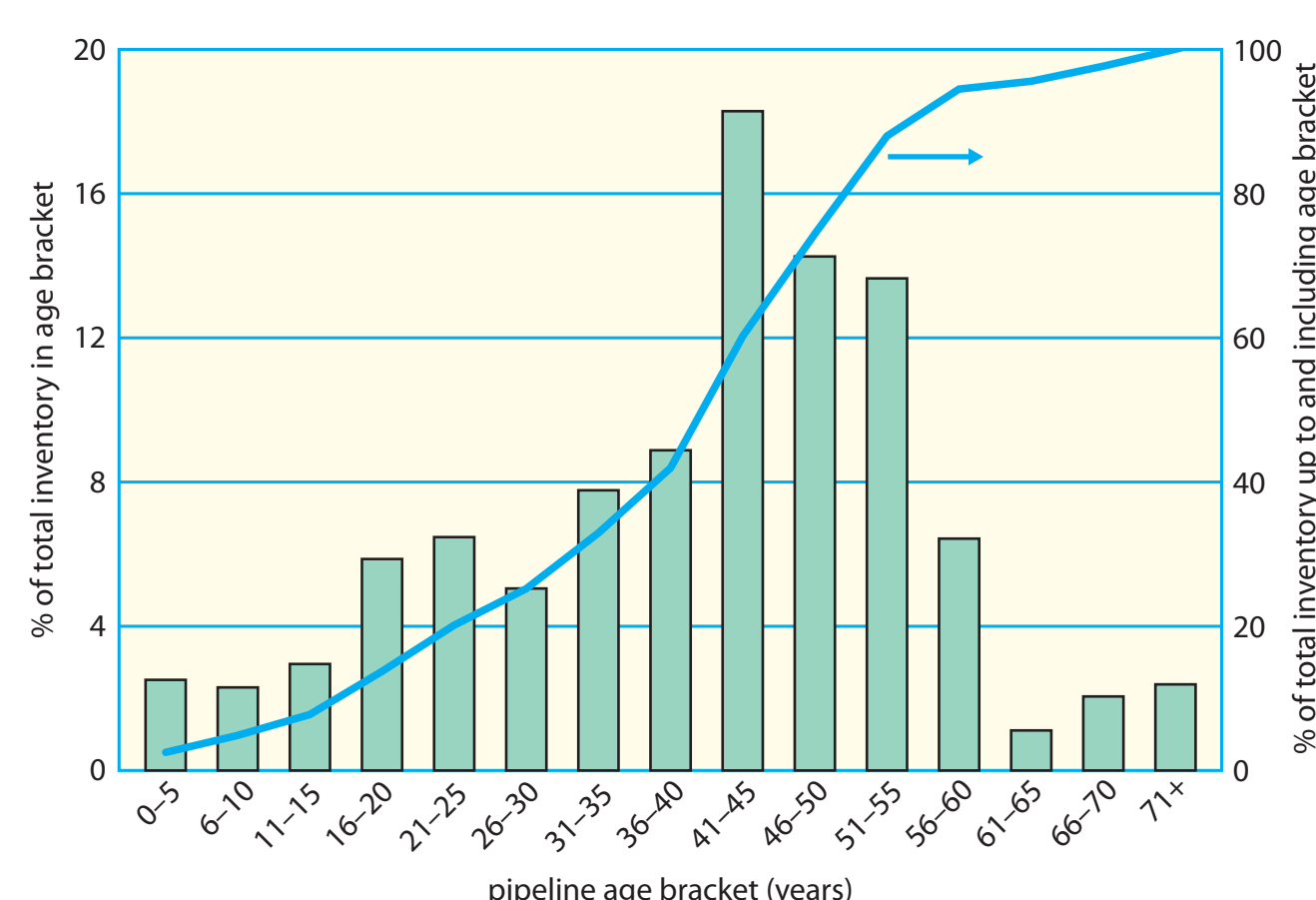
Statistical summary of reported spillages between 1971 and 2012

Since 1971 CONCAWE has collected data on spillages from cross-country oil pipelines in Western Europe with particular regard to causes and human and environmental consequences. The most recent survey covers incidents that occurred in 2012. A detailed analysis of the data for the whole 42-year period from 1971 to 2012 has been published in CONCAWE report 12/13.

Pipeline inventory

The 'CONCAWE inventory' has expanded over the years as more operators participated in the annual survey and now includes more than 36,000 km of EU cross-country oil pipelines, representing the bulk of all such facilities in Europe. They transport some 700 million m³ of material every year (i.e. more than the total EU crude oil consumption) about two-thirds of which is crude oil and one-third is refined products. The majority of these pipelines were laid in the 1960s and '70s, as a result of which the average age of the inventory has been increasing over the years. In 2012, nearly 60% of the inventory was over 40 years old (Figure 1).

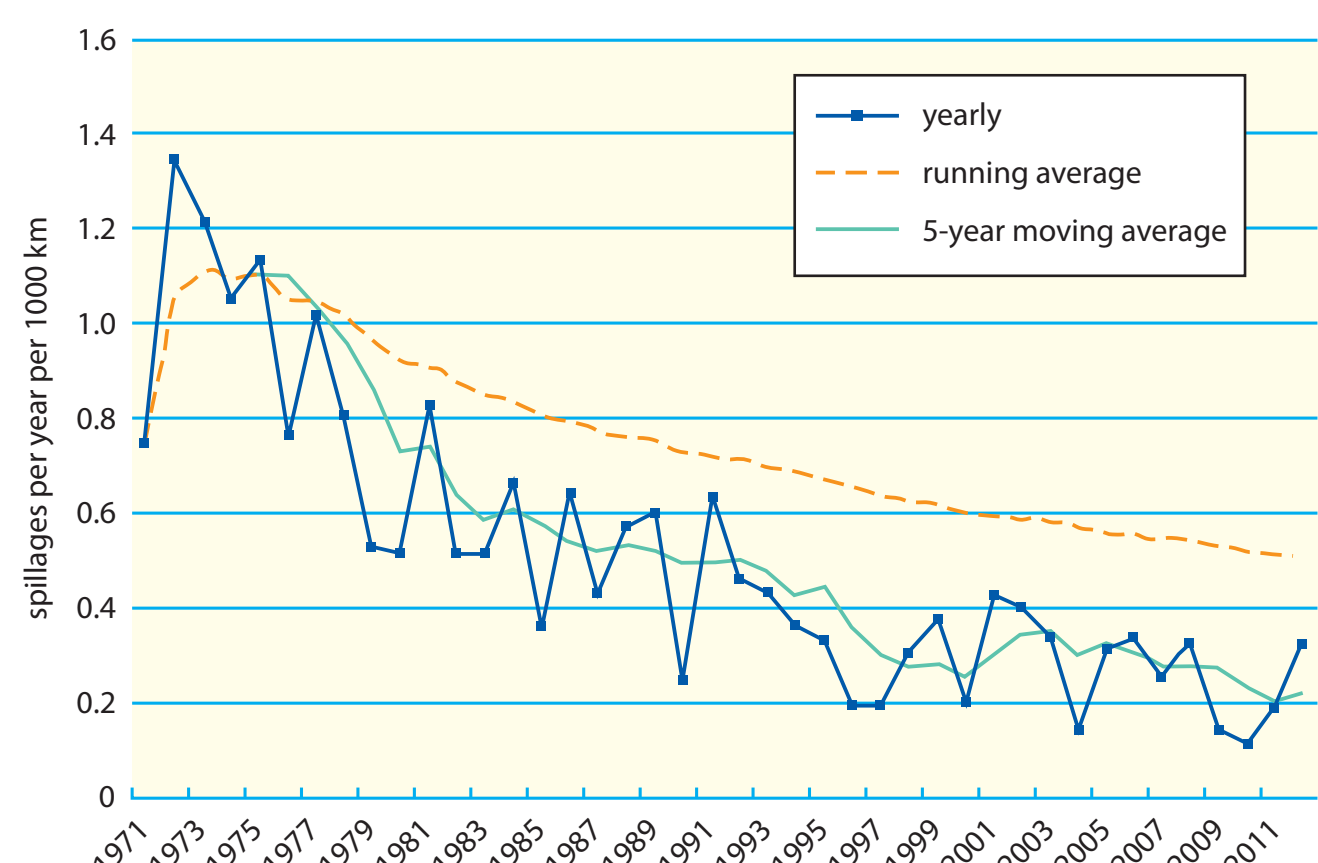
Figure 1 European oil pipelines age distribution in 2012



Number of spills and volume spilled

In spite of this ageing and of the increase of the inventory, the annual number of spills has slowly decreased over the years. The spills frequency shows a stronger downward trend (Figure 2). Although there are large variations from year to year, the total annual volume spilled has also decreased with time, with the average over the past five years currently standing at under 1,500 m³/a compared to the (slowly decreasing) overall running average of 1,940 m³/a. On average about 60% of the spilled oil is recovered, although this has been closer to 70% in recent years.

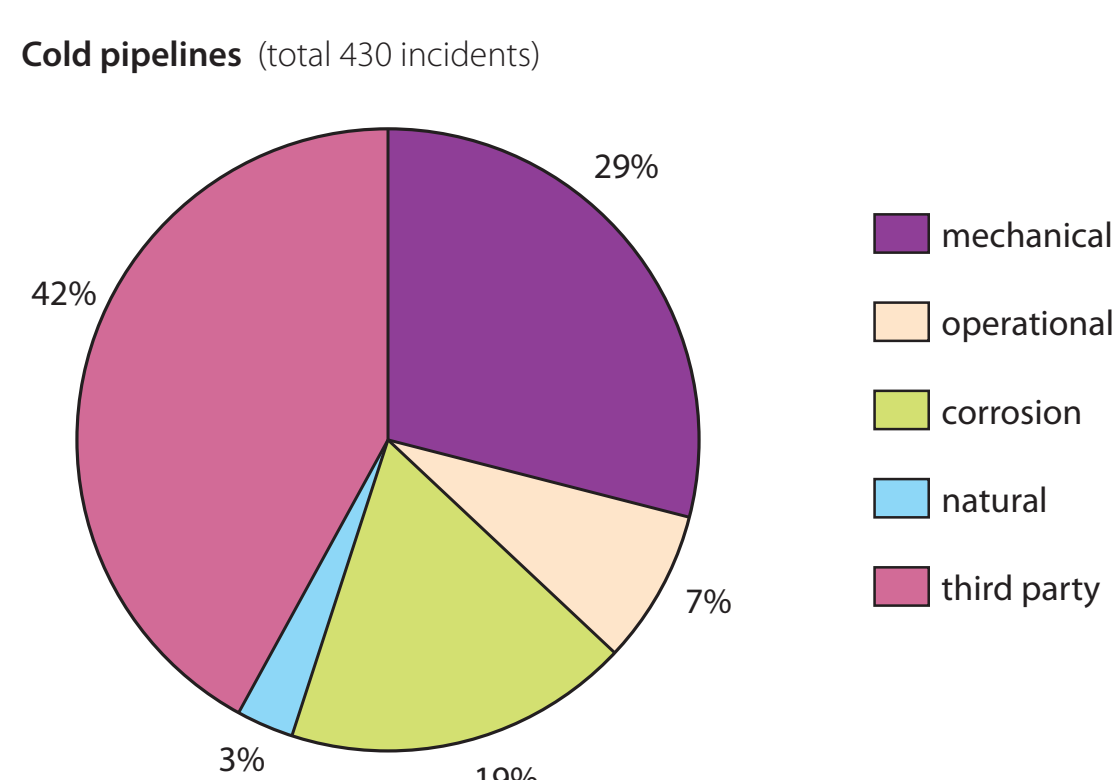
Figure 2 42-year trend of the spillage frequency



Causes of spills

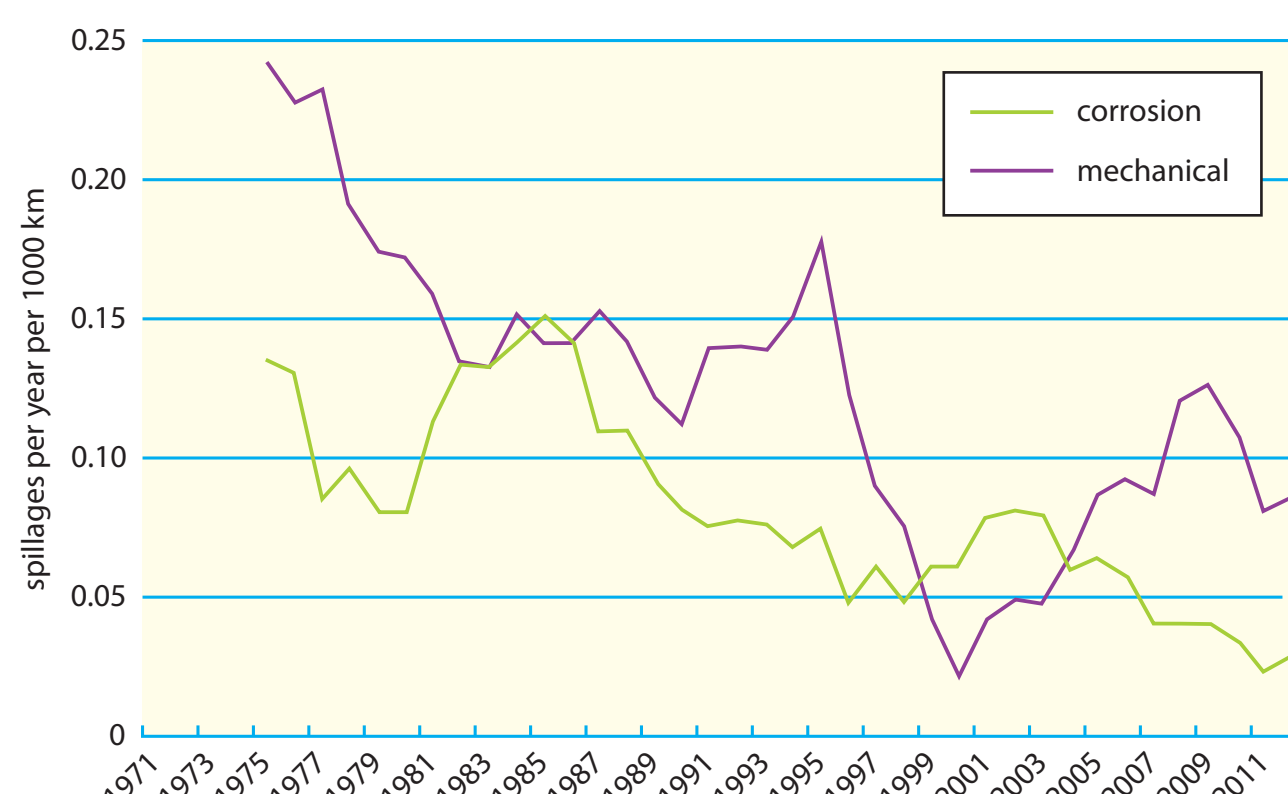
CONCAWE analyses the cause of spillages through five main categories, viz. mechanical, operational, corrosion, natural events and third-party interference (Figure 3), as well as through a number of sub-categories.

Figure 3 Distribution of major spillage causes



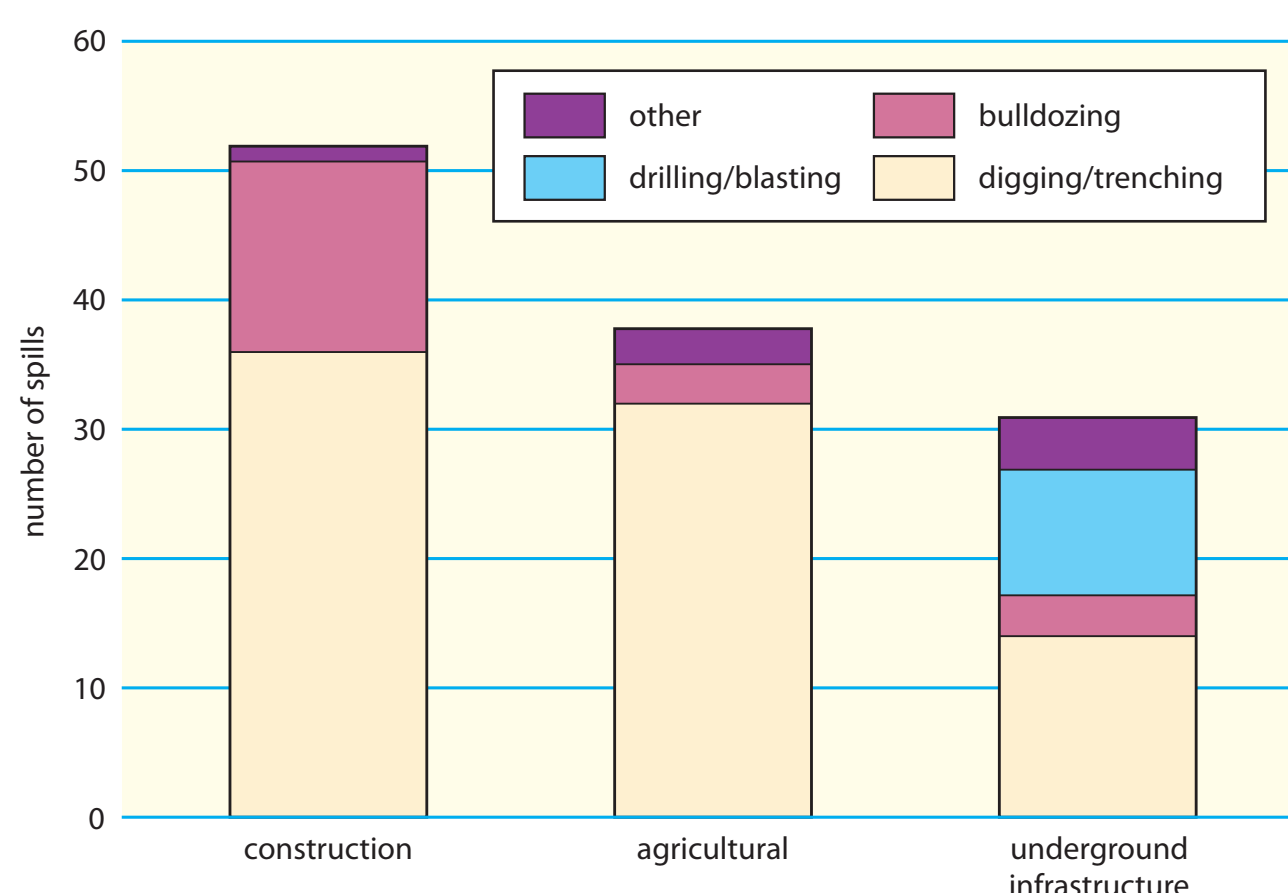
For cold pipelines, third-party interference is the main cause of failure. Mechanical and corrosion-related failures can be expected to increase as the inventory ages (Figure 4). A small proportion of the inventory consisting of insulated pipelines transporting hot products (mainly heavy fuel oil) has historically been affected by external corrosion. For this reason nearly all such lines have now been decommissioned. Although internal and external corrosion failures have occurred in cold pipelines, the frequency of such events shows a downward trend, suggesting that corrosion issues are well under control. After a sharp decrease in the 1990s, the frequency of mechanical failures has increased in the first decade of this century but the long-term trend is still clearly downward.

Figure 4 Frequency of spillages caused by corrosion or mechanical failure (5-year moving average)



The most common cause of spill is third-party interference. The majority of these spills are accidental and mostly related to farming and excavating activities (Figure 5). However, malicious or criminal activities (theft attempts), while representing a small proportion of all spills, have nevertheless increased in recent years.

Figure 5 Causes of accidental third-party spills



Third-party interference is seen by pipeline operators as the main threat to the integrity and safety of their operations. The industry is actively engaged internally, with land owners, contractors and with national authorities and regulators in order to devise effective ways to reduce this threat.