

## 6 Updating and Screening Assessment for 1,3-Butadiene

### 6.1 THE NATIONAL PERSPECTIVE

The main source of 1,3-butadiene in the United Kingdom is emissions from motor vehicle exhausts. 1,3-butadiene is also an important industrial chemical and is handled in bulk at a small number of industrial premises. Maximum running annual mean concentrations of 1,3-butadiene measured at all urban background/centre and roadside locations in the national network are all well below the 2003 objective of  $2.25 \mu\text{g m}^{-3}$ . The increasing numbers of vehicles equipped with three-way catalysts will significantly reduce emissions of 1,3-butadiene in future years. Recently agreed further reductions in vehicle emissions and improvements to fuel quality are expected to further reduce emissions of 1,3-butadiene from vehicle exhausts.

### 6.2 STANDARD AND OBJECTIVE FOR 1,3-BUTADIENE

The Government and the Devolved Administrations have adopted a maximum running annual mean concentration of  $2.25 \mu\text{g m}^{-3}$  as an air quality standard for 1,3-butadiene. The objective was for the standard to have been achieved by the end of 2003.

### 6.3 CONCLUSIONS OF THE PREVIOUS ROUNDS OF REVIEW AND ASSESSMENT FOR 1,3-BUTADIENE

The following conclusions were given for 1,3-butadiene in the earlier stages of Review and Assessment for King's Lynn and West Norfolk Borough Council:

- A single potentially significant source was identified at Stage 1, but through screening and consultation at Stage 2 it was concluded that there was no a significant risk of the objective being exceeded at relevant locations by the end of 2003 and beyond. Therefore no further assessment was required for this pollutant.

Emissions from vehicles were also expected to decrease over the period leading up to the 2003 target. A detailed assessment for 1,3-butadiene was not required. No AQMAs have been declared in King's Lynn and West Norfolk for 1,3-butadiene.

### 6.4 SCREENING ASSESSMENT OF 1,3-BUTADIENE

#### 6.4.1 Screening Check List

The Technical Guidance LAQM.TG(03) requires assessment of 1,3-butadiene to consider the following sources, data or locations:

- Monitoring data
- New industrial sources
- Existing industrial sources with significantly increased emissions or new relevant exposure

These are described in the following sections.

#### 6.4.2 Background Concentrations for 1,3-Butadiene

The average background 1,3-butadiene concentration estimated from the UK background maps (<http://www.airquality.co.uk/archive/laqm/tools.php>) was  $0.09 \mu\text{g m}^{-3}$  in 2003, with a maximum concentration of  $0.19 \mu\text{g m}^{-3}$ .

### 6.4.3 Screening Assessment of Monitoring Data

No monitoring of 1,3-butadiene has been undertaken in the Borough of King's Lynn and West Norfolk or in any neighbouring authorities.

### 6.4.4 Screening Assessment of Industrial Sources

The Guidance LAQM.TG(03) lists the following processes as significant potential sources of 1,3-butadiene:

**Part A** (percentage of total emissions from all UK plant in this sector to the UK total in brackets)

- Petroleum processes (2)
- Petrochemical processes (95)
- Organic chemical manufacture (3)

**Part B**

Rubber processes

A single process was identified in the previous round of Review and Assessment as having the potential to emit significant quantities of 1,3-butadiene: the Dow Chemical Company plant in King's Lynn – a latex rubber and pesticide production plant (Authorisation number AK3196). The Dow plant was modified in 2001 to vent all VOC stack emissions through a boiler to ensure complete decomposition of this source of 1,3-butadiene prior to release to the atmosphere. The fugitive emission element was estimated to be 100–200 kg 1,3-butadiene per annum.

Screening nomograms found fugitive emissions to be below the specified threshold, and together with slowing UK demand in future years, an exceedence of the objective was considered unlikely. The Borough Council of King's Lynn and West Norfolk has confirmed that there have been no significant changes to the plant operations since the previous round of Review and Assessment, and hence no substantially (>30%) increased emissions. This is also confirmed by the Environment Agency, who is responsible for regulating the site.

## 6.5 CONCLUSIONS FOR 1,3-BUTADIENE IN THE BOROUGH

Estimated background concentrations and data from national monitoring stations indicate that the objective for 1,3-butadiene was likely to have been achieved by the end of 2003. There are no industrial processes, current or proposed, in King's Lynn and West Norfolk Borough Council that have the potential to emit significant quantities of 1,3-butadiene.

A Detailed Assessment is not required for 1,3-butadiene in King's Lynn and West Norfolk.

	Source, location or data that need to be assessed	Updating and Screening Assessment
A	Monitoring data	This local authority is not monitoring 1,3-butadiene
B	New industrial sources	There are no new or proposed industrial sources in the Borough that have the potential to emit significant quantities of 1,3-butadiene
C	Existing industrial sources with significantly increased emissions or new relevant exposure	1,3-butadiene emissions have not increased substantially from any existing industrial process in the Borough. No new instances of exposure have been identified
	<b>Conclusion</b>	There have been no significant changes with regard to 1,3-butadiene in this Authority. <b>A detailed assessment is not required for King's Lynn and West Norfolk</b>