

## PARTICULATE MATTER IN AMBIENT AIR

Airborne particulate matter (PM) is of very different size and type depending on its origins. Due to its oxidizing and pro-inflammatory properties, it affects the respiratory and cardiovascular systems, inducing significant health impacts due to the size of the exposed populations.

$PM_{10}$  and  $PM_{2.5}$  are particles with median aerodynamic diameters of 10  $\mu\text{m}$  and 2.5  $\mu\text{m}$  respectively.

### Trend towards improvement

In 2014, the annual mean concentrations of  $PM_{10}$  and  $PM_{2.5}$  were below the European standards for the protection of human health<sup>1</sup> for all air quality monitoring stations in Wallonia<sup>2</sup>. The maximum number of days allowed for exceeding the daily limit value, defined for  $PM_{10}$  only<sup>3</sup>, was exceeded for 1 of the 22 stations<sup>4</sup>, the Engis industrial station.

For monitoring stations with continuous data series, the annual mean concentrations of  $PM_{10}$  decreased by 23 to 66% between 2005 and 2014 depending on the location of the station. The number of days on which the daily limit value was exceeded also decreased. Annual mean concentrations of  $PM_{2.5}$ , which have only been monitored since 2008, decreased by 15 to 37% between 2008 and 2014.

This progress is linked to the decrease of emissions observed since 2000<sup>5</sup>.

### Structural measures to be continued

Various measures, not specifically targeting PM, were taken in Wallonia to reduce emissions through the Air-Climate Plan (*Plan air-climat*) (2008-2012). As regards  $PM_{10}$ , an Action Plan in the Event of Pollution Peaks caused by Fine Dust (*Plan d'actions en cas de pics de pollution par les poussières fines*) was also adopted in 2008. It sets up an alert system and envisages gradual measures to reduce peaks

according to two action thresholds (70  $\mu\text{g}/\text{m}^3$ , 150  $\mu\text{g}/\text{m}^3$  for at least two consecutive days). These short-term measures pertain to transport (speed restrictions on motorways and expressways, tighter speed controls, free buses, etc.) and industry (temporary measures to reduce emissions of fine particulate matter on a voluntary basis). In addition, municipal action plans are implemented in the most affected municipalities (reduction in vehicle speed, lower temperatures in public buildings, etc.). In addition, in 2016, the three Regions introduced a new information threshold which is fixed at lower concentrations of  $PM_{10}$  (50  $\mu\text{g}/\text{m}^3$ ).

On the other hand, the new Air Climate Energy Plan 2016-2022 (*Plan air climat énergie 2016-2022 - PACE*)<sup>6</sup> lays down measures to be implemented by 2022 (e.g. measures to reduce emissions of PM from the residential sector, road traffic or industry, such as the Plans to Reduce Emissions of Particulate Matter (*Plans de réduction des émissions diffuses de particules - PRED*)). The PACE is intended to meet the air quality objectives set by Directive 2008/50/EC<sup>7</sup> on fine particulate matter.

<sup>[1]</sup> Annual limit value of 40  $\mu\text{g}/\text{m}^3$  for  $PM_{10}$ ; annual target value of 25  $\mu\text{g}/\text{m}^3$  for  $PM_{2.5}$  (limit value from 01/01/2015) (Directive 2008/50/EC) | <sup>[2]</sup> The stricter WHO annual guideline values (20  $\mu\text{g}/\text{m}^3$  for  $PM_{10}$  and 10  $\mu\text{g}/\text{m}^3$  for  $PM_{2.5}$ ) (WHO, 2006) were exceeded for 2 of the 22 stations for  $PM_{10}$  and for 13 of the 22 stations for  $PM_{2.5}$ . | <sup>[3]</sup> 50  $\mu\text{g}/\text{m}^3$  over 24h, max. 35 exceedances per year | <sup>[4]</sup> The WHO daily guideline values (50  $\mu\text{g}/\text{m}^3$ , max 3 exceedances per year for  $PM_{10}$  and 25  $\mu\text{g}/\text{m}^3$ , max 3 exceedances per year for  $PM_{2.5}$ ) (WHO, 2006) were exceeded for 18 of the 22 stations for  $PM_{10}$  and for all stations for  $PM_{2.5}$ . | <sup>[5]</sup> → AIR 4 | <sup>[6]</sup> → AIR Focus 3 | <sup>[7]</sup> Transposed by the Walloon Government Decree of 15/07/2010

Fig. AIR 10-1 Concentration of particulate matter in ambient air in Wallonia (2014)

