

Biocidal Products Committee (BPC)

Opinion on a request according to Article 75(1)(g)
of Regulation (EU) No 528/2012 on

Sulfuryl fluoride PT 8 and 18

Assessment of new information on global warming potential

ECHA/BPC/073/2015

Adopted

30 September 2015

Opinion of the Biocidal Products Committee

Sulfuryl fluoride PT 8 and 18

Assessment of new information on global warming potential

In accordance with Article 75(1)(g) of Regulation (EU) No 528/2012 of the European Parliament and of the Council 22 May 2012 concerning the making available on the market and use of biocidal products, the Biocidal Products Committee (BPC) has adopted this opinion on sulfuryl fluoride PT 8 and 18.

The request concerns the monitoring data from remote tropospheric air, which the authorisation holder Dow AgroSciences submitted to the European Commission, in order to comply with the requirements in the inclusion directives for sulfuryl fluoride (PTs 8 and 18).

This document presents the opinion adopted by the BPC, having regard to the conclusions of the rapporteur.

Process for the adoption of the opinion

ECHA received the request from the Commission on 30 January 2015. At the BPC-11 meeting of 15-18 June 2015 the BPC appointed the member from the Swedish Competent Authority as rapporteur. The rapporteur presented the draft opinion to the BPC at the BPC-12 meeting of 30 September – 1 October 2015. Following its adoption, the opinion was amended and finalised according to the outcome of the discussion.

Adoption of the opinion

Rapporteur: BPC member for Sweden

The BPC opinion was adopted by consensus.

Further details of the opinion and background

1. Request for the opinion and background

Although sulfuranyl fluoride was already known to be a greenhouse gas, at the time of writing the CA reports for PT 8 and 18, very limited information was available in order to assess its global warming potential (GWP). Relying on comparison with similar compounds, the RMS Sweden judged that the contribution of sulfuranyl fluoride to the total emissions of greenhouse gases was negligible.

The environmental risk of sulfuranyl fluoride with regard to its greenhouse gas potential was considered acceptable, and the substance was included in Annex I to Directive 98/8 for PT 8 on 1 January 2009 (Directive 2006/140/EC) and for PT 18 on 1 July 2011 (Directive 2009/84/EC). Both Inclusion Decisions were associated with a specific condition for monitoring concentrations of sulfuranyl fluoride in remote tropospheric air. For PT 8 the specific condition states that authorisation holder(s) shall submit reports of the monitoring directly to the European Commission every fifth year starting from 1 January 2009.

In compliance with the specific condition of the Inclusion Directive for PT 8, the authorisation holder Dow AgroSciences submitted monitoring data from remote tropospheric air together with two published and peer-reviewed scientific articles to the European Commission on 10 January 2014.

Formally, reports for PT 18 are not due to be submitted yet. However, it is obvious that the submitted information is equally relevant for this product type.

The Implementing Regulation for sulfuranyl fluoride as plant protection product ((EC) No 1107/2009) contains a similar provision for monitoring. The notifier of the substance has submitted the required monitoring data as confirmatory data. Recently, the member state responsible for the evaluation (UK) proposed to accept the estimates made by the authorisation holder at this time. UK also recommends that levels of sulfuranyl fluoride in the atmosphere need to continue to be monitored in the future.

2. Summary and evaluation of information supporting the request for the opinion

2.1. Summary of information

Evaluation and conclusions made in 2006 and 2008

During the evaluation of sulfuranyl fluoride under product types 8 and 18, the RMS Sweden made attempts to assess the contribution to global warming. Although sulfuranyl fluoride was already known to be a greenhouse gas, very limited information was available in order to assess its global warming potential (GWP) at the time of writing the CA reports. The GWP is a measure to describe the potential of a gas to contribute to atmospheric temperature increase relative to that of carbon dioxide; the latter set to 1. The GWP of sulfuranyl fluoride was estimated to be <378 at a 100 year time horizon, relying on data from two structurally related substances.

The atmospheric lifetime (at steady-state) of a gas and its infrared light absorption properties determine its GWP. Estimates of emissions from both biocidal and plant protection uses were made available by the applicant Dow AgroSciences, but information on atmospheric concentration were lacking. Information was also lacking regarding radiative properties of the substance, as well as physical and chemical processes that may lead to loss of the substance from the atmosphere.

Therefore, the RMS used an alternative method to estimate the atmospheric lifetime

of sulfuranyl fluoride. It assumed that the mass of sulfuranyl fluoride manufactured was equivalent to the mass of sulfuranyl fluoride emitted to the atmosphere. Since there were no actual measurements of sulfuranyl fluoride in the ambient atmosphere reported, the detection limit of <0.5 ppt obtained from analyses of remote tropospheric air samples was used as best estimate of atmospheric concentration. As a result, atmospheric lifetime of sulfuranyl fluoride was estimated to be <4.5 years.

The RMS estimated that the global emissions of sulfuranyl fluoride (from 1992-2000) in relation to total greenhouse gas emissions (from 1990) were <0.004%, expressed as CO₂ equivalents. They concluded that emissions of sulfuranyl fluoride represented a negligible contribution to global warming.

New data submitted by authorisation holder

In compliance with the requirements in the inclusion directives, the authorisation holder Dow AgroSciences submitted monitoring data from remote tropospheric air. The atmospheric concentration of sulfuranyl fluoride was measured as part of the Advanced Global Atmospheric Gases Experiment (AGAGE) project*. The measurements at 7 remote stations distributed around the world started during the years 2004 - 2008. Since then, concentrations have been steadily increasing. Between the years 2008 and 2012 the average atmospheric concentration of sulfuranyl fluoride increased by ca. 4% every year. Since sulfuranyl fluoride is almost exclusively used to control insects, and no natural sources are known, the whole increase can be attributed to its use as a biocide and in plant protection.

In addition, the authorisation holder submitted two published and peer-reviewed scientific articles. These articles make clear that the previous calculations substantially underestimated the GWP of sulfuranyl fluoride. The gas remains in the atmosphere up to 10 times longer than previously thought, with the oceans being the dominant sink. With help of computer models, using the data from the AGAGE project as well as measurements of its photolytic breakdown and infrared absorption, the authors calculated a GWP of 4800 (over 100 years) for sulfuranyl fluoride. This means that each kg of sulfuranyl fluoride emitted has a global warming effect equivalent to 4800 kg carbon dioxide, which is more than 10 times higher than previously estimated in the CA reports.

2.2. Evaluation of information supporting the request for the opinion

The data submitted by the authorisation holder are representative and reliable. The peer-reviewed research articles are reliable, relevant and of good quality.

Even the new calculations of the atmospheric lifetime and GWP involve some uncertainty but they are based on the best data currently available. The estimated tonnage will probably need to be updated at the latest by the time of the application for renewal, (the application must be submitted in the year 2017 for PT8).

The monitoring data in combination with the research articles make clear that the previous estimates of the Global Warming Potential of sulfuranyl fluoride need to be revised. Each kg of sulfuranyl fluoride emitted is estimated to have a global warming effect equivalent to 4800 kg carbon dioxide (over 100 years), which is more than 10 times higher than previously estimated.

On the other hand, current global emissions of sulfuranyl fluoride into the atmosphere are far lower than the anthropogenic emissions of carbon dioxide and other greenhouse gases. Based on the information provided by Dow AgroSciences, 3000 t

* Comprehensive information regarding the AGAGE project is available at <http://agage.eas.gatech.edu/index.htm>. Data from the AGAGE project are available at <http://agage.eas.gatech.edu/data.htm>. As of January 2014, the atmospheric concentrations of sulfuranyl fluoride from the AGAGE project were available through September 2012.

are estimated to be produced world-wide per year. Assuming that the total produced amount is emitted, multiplied by the GWP of 4800, the annual emission of CO₂ equivalents will be $14.4 * 10^6$ t. This has to be compared to the annual emissions of anthropogenic carbon dioxide and other gases of $46 * 10^9$ t (data from 2010[†]). Thus, despite its considerably higher global warming potential, the current contribution of sulfuryl fluoride to global warming is approximately 0.03%.

3. Overall conclusions

The BPC has reached the following conclusions:

1. The assumptions made in the assessment reports regarding the contribution of sulfuryl fluoride to global warming need to be revised. The global warming potential of this greenhouse gas is estimated to be 4800 (over 100 years), which is more than 10 times higher than in previous estimates.
2. Currently, the contribution of sulfuryl fluoride to global warming is small, approximately 0.03%, when compared to the total anthropogenic emissions of greenhouse gases into the atmosphere.
3. The development both regarding concentrations in the atmosphere as well as the amounts placed on the market, including plant protection products, should be continuously followed. This is sufficiently ensured by the monitoring requirements in place in the Inclusion Directives.
4. In the frame of the ordinary process of renewal of the approval of the active substance, particular attention should be paid to whether or not the contribution of sulfuryl fluoride to climate change poses an unacceptable environmental risk. At renewal stage the possibility of risk mitigation measures in order to reduce the emissions to air needs to be addressed.

[†] World Development Indicators: Trends in greenhouse gas emissions. The World Bank. <http://wdi.worldbank.org/table/3.9>

Annex

Reference list

Author	Year	Title	Owner
Krieger, M.	2014	Monitoring results of sulfuranyl fluoride in remote tropospheric air. Submitted by Dow AgroSciences to the European Commission on 10 January 2014.	Dow AgroSciences. Monitoring results from the AGAGE project are publically accessible.
Mühle, J. et al.	2009	Sulfuryl fluoride in the global atmosphere. <i>Journal of Geophysical Research: Atmospheres</i> , Volume 114, Issue D5, 1-13.	Public domain
Papadimitriou, V. et al.	2008	Experimental and Theoretical Study of the Atmospheric Chemistry and Global Warming Potential of SO ₂ F ₂ , <i>The Journal of Physical Chemistry A</i> , 112 (49), 12657-66.	Public domain