Category P 'Petroleum Gases' - Chemical Category Justification

(NB : all compositions are in v/v)

Category definition and its members	
1.1.	**Category Definition**
1.1.a.	**Category Hypothesis**

The **'Petroleum gases'** category covers mono-constituent C1-C4 alkanes. Members of this category include LPGs and are products of hydrocarbon refining operations, in association with stream-cracking or are produced in association with natural gas processing such as catalytic cracking and catalytic reforming as well as processing in chemical plants. Companies importing streams will need to confirm that such streams meet the chemical description and are in domain.

By definition, from the category, these streams have an increasing carbon number, within a defined range, and hence, and the majority of the properties will show a discernible trend. It is therefore reasonable to assume that the components of petroleum gases will behave in a reasonably predictable manner, and with respect to phys-chem and environmental fate and effect properties read-across is valid.

With regard to mammalian endpoints, category members are very volatile, low boiling liquids, liquefied gases or gases with inhalation representing the primary route of exposure. Longer term health effects are not anticipated from the various constituents. The exception to this is the C4 streams which are assumed to contain >0.1% 1,3-butadiene by default, in which case the streams will be considered to present a possible carcinogenic hazard.

1.1.b.	**Applicability domain (AD) of the category**

The category applies to substances and streams with the following analysis: single alkanes in the C1 to C4 range.

Boiling Point –the streams in this category will boil predominantly in the range of -162 to -0.5ºC

Specific components

Methane, Ethane, Propane, Butane, or Isobutane: >80% of one of these substances

Butane or Isobutane streams may contain >0.1% 1,3 butadiene

1.2.	**Category Members**

The table below contains the information of the category members which will drive the category assessment.

CAS Number	CAS Description	Registered Substance Name
106-97-8	butane	butane
		C4 stream - butane
		n-butane
74-82-8	Methane	Methane
74-84-0	Ethane	Ethane
74-98-6	Propane	Propane
75-28-5	Isobutane	Isobutane

1.3.	Purity / Impurities

Purity profiles have not been provided by the consortium.

Individual companies will need to determine the impurities of their product and ensure they consider in the CSR if appropriate.

Note : C4 streams are assumed to contain 1,3 butadiene at >0.1% by default unless otherwise specified.

2.	Category justification

The category is comprised of single carbon number alkanes. As such, the majority of their properties can be expected to behave in a predictable manner and will normally demonstrate a linear trend.

3.	Data matrix

Included in the CSR

4.	Conclusions per endpoint for C&L, PBT/vPvB and dose descriptor

Members of C1 -C4 Alkane gases include methane, ethane, propane, isobutane and butane. None are currently classified for human health hazards under Dir 67/548/EEC. They have low acute and subchronic toxicity properties following exposure via inhalation (oral and dermal not applicable as a gas at room temperature). No chronic toxicity data are available for any Petroleum Gases, however, weight of evidence from subchronic tests (up to 90 days) and a consideration of their simple chemical structures, which have no reactive groups and carry no alerts for likely genotoxic carcinogenic activity from established Structure Activity Relationship analysis, together with the conclusion that Petroleum Gases are not genotoxic, provide a strong case for concluding that none will show any significant carcinogenic activity. Weight of evidence indicates no evidence of sufficient concern for reproductive or developmental toxicity. There is no evidence that members of this category have potential endocrine disrupting properties and they also have low potential for neurotoxicity.

No serious effects have been reported that are considered to indicate an equivalent level of concern to CMR properties.