

# **Comments on a EU Proposal for Mine Methane Regulation**

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# Active coal mines

Proposed EU regulation	Actual situation
1. Mitigation of methane emissions should be implemented through a phase out of venting and flaring.	Mine gas flaring is not usually practised in the EU. Flaring of high concentration drained gas is the cheapest mitigation option.
2. Venting and flaring of methane from drainage stations shall be prohibited from [1 January 2025]	<p>Not feasible to use all the drained gas due to flow variability so surplus gas is either vented or it could be mitigated by flaring.</p> <p>The regulation could be accommodated by discharging drained gas into the ventilation stream and vented from the upcast shaft (increasing air quantity to ensure safe dilution would increase power consumption).</p>
3. Venting of methane through ventilation shafts in coal mines emitting more than 0.5 tonnes of methane/kilotonne [roughly 1m <sup>3</sup> /t specific emission] of coal mined, other than coking coal mines, shall be prohibited from 1 January 2027.	<p>Drainage gas mixed with ventilation air (see 3 above) would allow application of VAM oxidation and possible heat recovery technology.</p> <p>Shafts in low specific emission mines will discharge very low concentrations of methane which could be treated using VAM technology but with natural gas or propane added to maintain the oxidation process (thus increasing CO<sub>2</sub> emissions).</p>
4. From [1 January 2025], drainage station operators shall notify the competent authorities of all venting and flaring events	The only options under current practice are to vent or flare unused drained gas. Flaring is a mitigation measure. See item 3 for a possible response to the Regs by operators.

# Closed and abandoned mines

Proposed EU regulation	Actual situation
<p>5. measurement equipment shall be installed on all elements listed in point (v) of Part 1 of Annex VII for closed coal mines and abandoned coal mines where operations have ceased since ... [50 years prior to the date of entry into force of this Regulation].</p>	<p>There could be a large number of abandoned mines, many of which may not have a vent to measure at, some mines may not be locatable and many could be flooded and not emitting.</p>
<p>6. The measurement equipment must operate for more than 90% of the period for which it is used to monitor the emissions, excluding downtime taken for re-calibration.</p>	<p>Overly demanding for abandoned sites without power, some with no emissions, or dispersed emissions over a wide area. In many instances, monitoring would involve portable battery powered equipment.</p>
<p>7. Member States shall develop and implement a mitigation plan to address methane emissions from abandoned coal mines. ... Venting and flaring from equipment referred to in Article 25(2) shall be prohibited from 1 January 2030</p>	<p>After 1 Jan 2030, lowest cost mitigation by flaring will be banned, so a high-cost solution will have to be borne by governments e.g, thermal oxidation. This technology would be able to treat lower concentrations than could be flared. However, high concentration methane would need to be diluted with air to allow oxidiser processing, which is very wasteful in energy terms, and the CO<sub>2</sub> generated would be the same as if flared. Gas would also need extracting from the workings using electrically powered pumps</p>
<p>8. For closed or abandoned underground coal mines, while flooding the mine can prevent methane emissions, this is not systematically done and has environmental risks.</p>	<p>Deep mines are generally dewatered to allow mining. Groundwater recovery which floods the workings will occur once dewatering ceases. Environmental risks to aquifers can be managed using proven engineering methods.</p>

# Conclusions

- The proposed mine Regulations appears to be based on oil and gas rules that are not applicable.
- Flaring of drained gas, although not commonly practised at mines, is the lowest cost mitigation measure.
- It is not feasible to use all drained gas due to variability in flow. Unused gas should be flared.
- Many mines flood naturally after abandonment as the groundwater recovers (where strata have been dewatered to allow mining). This is an effective mitigation process and, in many instances, will happen safely without intervention.
- High frequency monitoring of abandoned mines is neither necessary nor practical. Adequate results could be obtained using hybrid measurement and modelling methods (see examples from UK and USEPA).
- A much simpler approach to mitigation would be to:
  - Price methane under a reducing cap, allowing operators to decide on mitigation measures, and,
  - Specify dates when different types of coal mine have to be closed (the ultimate mitigation).

# Suggestions

## Working mines

- CEMS for vented drained gas and VAM
- Mitigation of drained gas by utilisation where feasible, with flaring of unused gas
- Flaring of drained gas only, where use not feasible
- Mitigation of VAM where feasible (choice between mitigation and paying a penalty)
- Penalty for vented gas

## Closed and abandoned mines

- Future closures – design for vent monitoring and mitigation; mitigation by groundwater recovery, utilisation and or flaring.
- Preparations at closure are the responsibility of the mine owner; post closure responsibility and liabilities pass to a government authority
- Mitigation to cease once becomes impractical, when monitoring is replaced by weekly measurements and modelled projections.
- Already abandoned mines – implement a hybrid monitoring and modelling approach