IP RESEARCH REPORT

A FRAMEWORK FOR THE USE OF KEY PERFORMANCE INDICATORS OF MAJOR HAZARDS IN PETROLEUM REFINING

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FOREWORD

The Energy Institute, on behalf of the UK Petroleum Industry Association (UKPIA), commissioned the investigation detailed in this Research Report. It reflects a shift in focus from occupational safety onto process safety as a better basis for indicating the safety performance of sites with major hazards potential.

Specifically, this Research Report describes the analysis and interpretation of incidents from UK petroleum refineries that had at least a minimal potential to escalate to major hazards[1]: their causes are benchmarked against dangerous occurrence potential incidents and actual major hazard incidents drawn from databases and analysed using, where possible, the same methodology. This has been used to test the correlation between their respective causes, and thence to consider appropriate key performance indicators (KPIs) that could be used to provide a measure of major hazards in the petroleum refining industry.

The criteria used in developing effective KPIs were that they should:

— Provide a measure of the annual improvement for individual sites.
— Provide meaningful comparisons between sites.

To achieve this it was considered necessary to have criteria that are:

— In sufficient number so that the year-on-year change would be statistically significant.
— Applicable across the petroleum refining industry.
— Able to be put in numerical form to allow for a scoring system.
— Simple, to minimise the risk of varying interpretation between sites.

The KPIs proposed here are however substantially different from those put forward in HSE *Pilot project on voluntary reporting of major hazard performance indicators* and so the reasons for the differences are detailed. As some of these changes are significant, this Research Report should be widely read and commented on by petroleum refining companies and relevant government agencies with a view to determining whether there is value in embedding the KPIs proposed herein into petroleum refining company safety management systems.

[1] For the purpose of this Research Report, the following definitions apply:
— A 'potential incident' is one in which there is at least a minimal probability that the problem could escalate to a major hazard incident.
— A 'near miss' incident is one which has at least a significant probability that the problem could escalate to a major hazard incident.

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