

Assessment of Mist Levels Generated by Cirro Cracked Oil Machines  
Cirro Lite Europe Ltd

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Report

## Assessment of Mist Levels Generated by Cirro Cracked Oil Machines

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<b>Contents</b>		<b>Page</b>
1	Introduction	1
2	Method of Assessment	2
3	Legislation	2
4	Results and Discussion	3
5	Conclusion	4
6	Disclaimer	4



## 2 Method of Assessment

Mist generated from the Cirro Strata cracked oil machine was assessed visually, and further interpretations were made based on comparisons with levels measured in the COSHH assessment undertaken by London Scientific Services (LSS) on 28 June 1991.

On that occasion, monitoring was carried out using relevant guidance taken from the HSE MDHS 14. The Cirrus System machine was run for about 5 minutes in a large room (approximately 3520 m<sup>3</sup>) to give the mist effect normally required in studios, theatres or concerts. Background mist concentrations inside the studio were then measured using four personal pumps over a period of between 2.5 and 4.5 hours. Concentrations of mist varied between 0.06 and 0.4 mg m<sup>-3</sup> and were categorised as low.

The present survey was carried out at Cirro Lite premises by running the Cirro Strata and the original Cirrus System machine, over a period of time until the conditions used in the previous assessment (e.g. the mist density) were fully recreated. The test room was partially occupied by equipment and the available volume of air for the dispersion of the mist was therefore substantially reduced. On this basis, the machines were run for three minutes instead of five to achieve the same mist level used in the 1991 assessment and most commonly required in working situations. The tests were run consecutively and the room was thoroughly ventilated between tests until the mist from the previous test was fully dissipated.

After the three minutes, the machines were switched off and the mist concentrations were visually assessed. In order to further characterise mist intensities, the lights were then switched off and a hand held light similar to those used in the theatre and cinema was used to give a beam of light. The mist level was then further assessed by looking at the definition of the light beam. Denser mists result in more defined beams and vice versa.

## 3 Legislation

The Health and Safety Executive in its Guidance Note EH 40/95 stipulates an Occupational Exposure Limit (OEL) for total mist of 5 mg m<sup>-3</sup>. This is based on an 8-hour weighed average reference period.

The OEL is the concentration of an airborne substance, averaged over a reference period, that should not be exceeded. If it is exceeded, the employer must promptly identify the reasons and take appropriate steps to reduce exposures as soon as reasonably possible.



## 4 Results and Discussion

### Cirro Strata (CS6)

The Cirro Strata cracked oil machine is the latest oil machine developed by Cirro Lite Ltd. It can be split (compressor and oil tank) and the consumption rate of oil is approximately 150 ml every four hours.

The mist output generated by the Cirro Strata machine was observed to be lower than that generated by the Cirrus System. It was pointed out by Mr J. Coppen that the levels of mist were slightly lower than normal and that the machine was underperforming. The volume of mist coming out created a very thin background mist compared to the original Cirrus System. The observation of the mist through the light beam showed the beam edges defined only very slightly.

Levels of mist generated by the Cirro Strata machine were observed to be significantly below those given by the original Cirrus System machine. Although the machine was slightly underperforming, it was stated by the client that levels of mist would normally be below those generated by the Cirrus System. On this basis, mist concentrations of well below the OEL of  $5 \text{ mg m}^{-3}$  are expected, and there would be considered as acceptable by the HSE.



## 5 Conclusions

The mist produced by the Cirro Strata cracked oil machine is considered to be as acceptable in terms of its use to produce the mist effects normally required and outlined above.

The Cirro Strata machine was observed to produce levels of mist lower than those generated by the original Cirrus System when used for the same intended purpose of producing a light beam illumination effect. The mist levels under these conditions should not exceed the peak concentration of  $0.4 \text{ mg m}^{-3}$  measured with the Cirrus System machine which is well under the OEL of  $5 \text{ mg m}^{-3}$ .

## 6 Disclaimer

We confirm that in preparing this report we have exercised all reasonable skill and care.