

Transport of Pollutants Through Liquid-Gas Interfaces – A Numerical Approach

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We propose to conduct a numerical investigation of the transport process involved when pollutants move across a liquid-gas interface as encountered in watercraft exhaust systems. Previous investigation into tracking pollutant dispersal from a watercraft exhaust system indicates the need for accurate modeling of the interface between the surface of the water-body and the air above this surface. Exhaust gases like Carbon Monoxide (CO) diffuse into the air and get entrained into the watercraft due to the aerodynamics of the craft (station wagon effect), thereby posing an occupational threat to employees in the marine industry. In this study, we propose to use advanced CFD techniques to predict the transport of pollutants by convection and diffusion across a liquid-gas interface, and apply this prediction methodology to the problem of mitigating CO entrainment into a watercraft cabin.



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Main Menu

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- ◆ **Welcome and Opening Remarks**
- ◆ **Keynote Speakers**
- ◆ **Podium Presentations**
- ◆ **Poster Presentations**
- ◆ **Video Montage of the 9th Annual PRP
Symposium**
- ◆ **Participating Universities**
- ◆ **Advisory Board Members**
- ◆ **Acknowledgements**
- ◆ **Problems Viewing the Videos**

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