Education Intervention Among Artisanal Fishermen of the Yucatan Peninsula, Separating Engine Exhaust Gases from Compressor Intake

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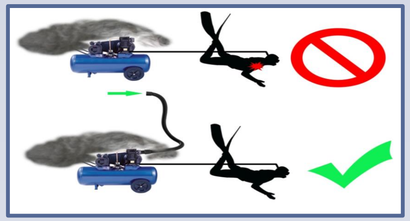
Background

Artisanal fishermen use surface supplied compressed air to dive for sustenance and profit. Entrainment and wind patterns affecting gasoline engine exhaust (GEE) cause carbon monoxide (CO) to be compressed into volume tanks aboard the fishing boats[1]. Simple separation of GEE from compressor intake has been shown to drastically reduce CO in the volume tanks[2]. Focus groups and educational interventions in these artisanal fishermen help establish a clear intervention model. We seek to determine the efficacy of our previous educational interventions after a one-year period in the fishing village of Río Lagartos.



Purpose

We want to see how efficacious our previous educational interventions are after one-year period among a single fishing village.

Methods

In 2014, focus groups of fishermen provided insight into concerns regarding impacts of the proposed intervention. Fishermen from one cooperative participated in a workshop with schematics, power point presentations, and models illustrating the importance of separating GEE and compressor intake. Posters explaining the intervention were hung in 6 fishing cooperatives. After 1 year, we visited Río Lagartos, counted boats using the intervention, and interviewed local fishermen.

Results

After 1 year, the number of boats using the gas separation intervention increased from 7 to 34 of 198 total boats. Supplies used for the intervention varied, especially with hose material. The lack of a particle filter and direct connection of the hose to the air intake were common modifications to the original intervention.

Total Number of Vessels with Compressors	Vessels with Separation Intervention	One Year After Intervention	Increase in Intervention Adaptation
198	7	34	27
100%	3.54%	17.17%	13.64%

Conclusion

The simplicity of the intervention, its efficacy, and the collaboration of fishermen in the design helped with its adoption by other fishermen. Workshops in surrounding communities may help continue spreading this efficacious, simple intervention.

Discussion

We hope that the adaptation of our intervention continues to be applied throughout the fishing villages. This intervention was our initial attempt to establish communication and open discussions with the fishermen in this village. Our aim is to increase future collaborative approaches to identifying and limiting the risks for decompression sickness and CO poisoning.