

Correspondence

Commentary on Morgan M, Schramm J, Kofoed P, Steensberg J, and Theilade P. Automobile Exhaust as a Means of Suicide: An Experimental Study with a Proposed Model. *J Forensic Sci* 1998 July;43(4):827–836.

Sir:

This paper is a useful addition to our understanding of the mechanics of auto exhaust suicides.

The study is, however, slanted toward the demographics of Denmark, where private garages are relatively uncommon, and where in-vehicle piped-in exhaust is presumably the method of choice.

After reviewing our statistics over the past 19 years, we find that out of 87 exhaust suicides during that period, 77% were in a garage without tubing into the car interior from tailpipe. The remaining 23% were mostly in-garage with tubing, and a few were outdoors with tubing.

Since the time interval for a lethal concentration of either CO or O₂ exclusion with CO₂ build-up to occur would be considerably longer in the larger and less air-tight space of a garage, the same experimental study under these conditions would presumably show a lower degree of lethality from the catalytic converter equipped cars than that in the authors' study. Accordingly, the in-garage exhaust suicide attempts would be more likely to fail.

When the statistics of our office from 1991 to the present are analyzed, we find that 47% of the suicides (total 19) involved piped-in exhaust gases versus 23% in the cases from 1979 to 1998. This indicates a recent change in method of choice, possibly dictated by failure using the garage method, or anticipated failure by increasingly sophisticated subjects. It has been our observation that in several recent successful garage suicides, an older model car was used in preference to a late model car which was also available.

Between the periods 1979–1984 and 1992–1998, the incidence of all exhaust suicides dropped by 50% in our jurisdiction. We have seen no exhaust suicides without lethal CO levels.

We have seen two suicide notes describing prior failures using auto exhaust in the garage.

Whatever effect catalytic converters may have on suicides, it is clear that they will prevent the disastrous accidental (sometimes multiple) fatalities which occur by through-wall diffusion when vehicles are left running in closed attached garages.

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Commentary on Giles A, Commentary on Gernandt MN, Urlaub JJ, An Introduction to the Gel Pen. *J Forensic Sci* 1996 May; 41(3): 503–4. *J Forensic Sci* 1997; 42(4):759

Sir:

Dr. Giles observed a "faint but distinct fluorescence" of the blue Pentel Hybrid Roller, whereas the authors of the technical note, MN Gernandt and JJ Urlaub, observed no fluorescence in this case. Dr. Giles observed the fluorescence through an 830 nm long pass camera filter with 0.6 sec integration and 440–600 nm excitation radiation. Gernandt and Urlaub used a VSC-1 and Dr. Giles explained her results with the higher sensitivity of her VSC-4.

As it is stated in the ASTM Standard Guide for Test Methods for Forensic Writing Ink Comparisons (E 1422) under 7.3.3.1 "Record the IRL (Infrared Luminescence) characteristics of the ink relative to the substrate as darker, similar, or lighter, indicating degree as appropriate," the observed IRL of an ink stroke is strongly dependent on the substrate. Neither of the authors gave any information concerning the paper or the substrate the inks were drawn on. With the equipment at the BKA-lab, I found IRL of the blue Pentel Hybrid Roller drawn on two different substrates: white, woodfree paper from 715 nm upwards and recycling paper from 830 nm upwards.

It is obvious and inherent to the method that a useful comparison of IRL results is only possible if the inks were drawn on the same substrate. Even if all examiners had used the same substrate, they still might have found different results, because the degree of IRL is not only dependent on the equipment but also dependent on the thickness of the ink layer.

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Commentary on Postmortem diagnosis of leukodystrophies Shields LBE, Corey Handy T, Parker JC, Burns C. Postmortem diagnosis of leukodystrophies. *J Forensic Sci* 1998;43:1068–1071.

Sir:

The recent case series by Shields et al. reminded forensic pathologists of the importance of recognizing rare but inheritable leukodystrophies at autopsy (1). However, pathologists also need to be careful not to misdiagnose similar appearing conditions as an inheritable leukodystrophy. A condition that can mimic adrenoleukodystrophy (ALD) and that probably occurs more frequently than ALD in a forensic pathology practice is solvent vapor abuse leukoencephalopathy (SVAL) (2). Chronic inhalation of solvent vapors such as toluene can result in cerebral demyelination with histologic and ultrastructural features similar to ALD. However, in ALD the abnormality in lipid metabolism is generalized and causes changes in both the central nervous system and other viscera. In SVAL, the changes are limited to the central nervous system (2). If an autopsy is limited to the examination of the head and brain,

pathologists may have difficulty distinguishing between ALD and SVAL on the basis of morphologic findings. A decedent's history of solvent vapor abuse can help in the diagnosis of SVAL. It is important that forensic pathologists be able to distinguish SVAL from ALD so that surviving family members are not burdened with the erroneous diagnosis of an inheritable disease.

References

1. Shields LBE, Corey Handy T, Parker JC, Burns C. Postmortem diagnosis of leukodystrophies. *J Forensic Sci* 1998;43:1068–1071.
2. Kornfeld M, Moser AB, Moser HW, Kleinschmidt-DeMasters B, Nolte KB, Phelps A. Solvent vapor abuse leukoencephalopathy. Comparison to adrenoleukodystrophy. *J Neuropathol Exp Neurol* 1994;53:389–398.

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Authors' Response

Re: Letter from Kurt E. Nolte, M.D.—commentary on “Post-mortem Diagnosis of Leukodystrophies”

Sir:

In reply, we thank Dr. Nolte for his reminder of the pathologic changes associated with Solvent Vapor Abuse Leukoencephalopathy (SVAL). In the cases presented in our case series, there was a well documented medical history of neurologic alterations since early childhood. The comparison of Adrenal Leukodystrophy to Solvent Vapor Abuse Leukoencephalopathy reminds us as Forensic Pathologists that the autopsy is not a “black box” exercise—history and scene circumstances are also important.

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