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(54) **METHOD AND APPARATUS FOR DETECTING ENVIRONMENTAL SMOKE EXPOSURE**

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(52) **U.S. Cl.** **600/532**; 600/529; 73/23.3

(58) **Field of Classification Search** 600/529–543; 73/23.3; 422/84
See application file for complete search history.

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(57) **ABSTRACT**

The present invention includes a method and apparatus for detecting exposure to environmental tobacco smoke by analyzing a sample of breath using electronic sensor technology, including surface acoustic-wave gas sensor technology. The method determines the presence and concentration of substance(s) (or a class of substances) indicative of environmental smoke exposure. Diagnostic software is used to identify substances where a stored library of signatures is compared to the signature obtained from the system. Signal processing and neural networks are preferably utilized in the analysis.

41 Claims, 5 Drawing Sheets