

# Why it is too early for an EPA ENERGY STAR Program for Room Air Cleaners

A commentary by

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on the EPA ENERGY STAR Draft 1 on Room Air Cleaners

The proposed EPA ENERGY STAR program for room air cleaners, as it stands in its draft version, does a disservice to consumers. Over the past two years, the nation has seen air cleaners move from allergy control products to tools that help victims of terrorist attacks cope with the aftermath of airborne pollution and an integral part of the nations homeland defense strategy. Furthermore, hundreds of thousands of air cleaners are being sold in response to potential chemical and biological threats. This is not the time when the EPA should use an outdated and flawed performance test designed by a mass-market manufacturers organization to send the wrong message to consumers.

While the major objective of the ENERGY STAR Program is to promote energy efficient appliances, the EPA has a responsibility to ensure that the ENERGY STAR program doesn't promote products with significant performance disadvantages. This would weaken the ENERGY STAR brand in the mind of consumers and would hurt the credibility of ENERGY STAR in the long run. The proposed ENERGY STAR program for room air cleaners would promote less effective air cleaners, due to the flawed AHAM rating system on which it would be based.

There are three main reasons that the EPA, in the interest of consumers, would be well advised not to use the AHAM rating system as a basis for its ENERGY STAR Program:

1. AHAM does not distinguish between permanent particle removal and temporary particle removal. Particle removal due to capture inside the air cleaner or deposition on room surfaces are not distinguished by the AHAM test. This distinction is essential, because particles which an air cleaner deposits on room surfaces may be easily re-launched into the room air at a later point. The AHAM test favors air cleaners with ionization, because air cleaners using ionization release a significant amount charged

into room air and may attach to the surfaces of the AHAM test chamber before they are counted. In addition to the flawed performance advantages of ionizers, the EPA ([www.epa.gov/iaq/pubs/residair.htm](http://www.epa.gov/iaq/pubs/residair.htm)) itself recognizes the possible health effects of releasing charged particles into indoor air. Under the section "*Possible Effects of Particle Charging*", the EPA Summary on Residential air cleaners states: "Another factor with respect to ion generators, particularly those that do not trap some of the charged particles, is the effect of particle charging on deposition in the respiratory tract. Experiments have shown a linear increase in particle deposition with charge; therefore, the use of ion generators may not reduce the dose of particles to the lung."

2. The AHAM test does not use a realistic mix of airborne indoor pollutants typically found in homes and offices. The AHAM test only evaluates air cleaner performance for coarse and fine coarse particles, which make up less than 20% of all particles in indoor air. Air cleaner performance for ultra-fine particles and gaseous pollutants is not tested.

A. The three AHAM tests (pollen, dust and tobacco smoke), which are part of the AHAM certification concentrate on coarse particles, which are easily filtered by even less effective air cleaners. Even the AHAM test, which is supposed to focus on the smallest of particles, the tobacco smoke test only measures particles in the size range 0.1 - 3 microns. These particles make up less than 20 % of all particles in indoor air. Ultra-fine particles make up more than 80% of all particles in the air and may cause serious health effects ([www.webcom.com/~bi/celldamagelat.htm](http://www.webcom.com/~bi/celldamagelat.htm)). AHAM and many air cleaner manufacturers have been ignoring to look at the effectiveness of air cleaners of ultra-small particles. The performance of different air cleaning technologies for ultra-fine particles varies considerably. Preliminary research by IQAir North America, Inc. shows, that some of the highest performing AHAM air cleaners have filter efficiencies under 50% for ultra-fine particles. The AHAM certification program has caused air cleaner manufacturers to design air cleaners that are optimized to filter the larger particles tested by AHAM rather than the bulk of particles present in indoor air.

B. AHAM does not evaluate the removal of gaseous air pollutants and odors. The air we breathe contains two types of contaminants: particles (solid or liquid) and gases. Not only does AHAM ignore gaseous filtration, AHAM actually promotes consumer confusion through its rating

system. AHAM misleads consumers to think that AHAM certified air cleaners are effective against gaseous pollutants and odors, by rating air cleaner performance for "tobacco smoke". Many consumers buy air cleaners with the hope to remove gaseous chemicals and odors from cooking, tobacco smoke, building materials, industry, natural disasters (e.g. wild fires) and possible terrorist attacks etc. The AHAM seal fails to make the consumer aware that only the removal of tobacco smoke particles is evaluated, but not the removal of tobacco smoke gases or odors, which most consumers reasonably assume to be part of "tobacco smoke". Even the EPA ENERGY STAR Eligibility Draft 1 is not clear enough between the distinction of particulate and gaseous filtration. In section F, for example, is stated: " Within the scope of ANSI/AHAM AC-1-2002, CADR is defined as the measure of the delivery of contaminant free air by a household electric, cord-connected room air cleaner. More technically, CADR represents the rate of contaminant reduction..." These statements are incorrect because an airborne contaminant can be either a particle or gaseous. Since AHAM measures only air cleaner effectiveness for some particles and not at all for gaseous contaminants, "contaminant" should be changed to "particulate contaminant" or "particle".

3. AHAM does not test average air cleaning performance, but only initial air cleaning performance. The AHAM certification results do not give a realistic account of the actual performance that a customer can expect from an air cleaner over time. Other industry air filtration tests, including ASHRAE tests for filters evaluate average performance, because average performance is the only accurate measure of the actual performance as experienced by the customer. The AHAM test evaluates performance only during first 72 hours of usage. By evaluating only initial performance AHAM has caused air cleaner manufacturers to design air cleaners for maximum short-term performance for AHAM test pollutants. Most manufacturers have sacrificed solid long-term performance, because it is not evaluated by AHAM and requires more costly technology. As a result, the certified AHAM CADR rating of many air cleaners is inaccurate to establish an air cleaner rating. AHAM CADR performance of air cleaners give an initial snapshot of air cleaner performance, which is in most cases completely unrepresentative of average air cleaner performance. The AHAM test actively disadvantages air cleaners with good long-term performance, because manufacturers have

higher component costs and may have to sacrifice some initial performance for good long-term performance (for example, by using high-efficiency pre-filters instead of low efficiency pre-filters). Only manufacturers that do not participate in AHAM have an incentive to do so, because AHAM certification ignores long-term performance. The ENERGY STAR Program Draft 1, by virtue of disregarding long term performance will cause manufacturers to abandon air cleaning technologies which provide superior long-term air cleaning, in favor of technologies that provide the better short-term performance and lowest energy consumption.

The fact that the ENERGY STAR program would qualify air cleaners on the basis of energy consumption on the highest speed setting, makes it an unrealistic tool. Our research shows that air cleaners are over 95% of their entire usage used on lower speed levels than the top speed. It is a fact that most air cleaners use an unproportionately high amount of energy on the lower speeds in relation to their performance. Many air cleaners that may qualify for ENERGY STAR on high speed, will not qualify for ENERGY STAR on the low speed and may indeed perform worse than some air cleaners that did not qualify for ENERGY STAR on high speed.

## **Conclusion**

Does the EPA ENERGY STAR program truly want to support an outdated test that falls short on giving consumers necessary information to make an informed choice regarding an appropriate air cleaner?

The EPA ENERGY STAR program thus makes itself an unwitting accomplice in promoting the interests of an industry organization, that clearly has the interests of its members closer at heart than that of consumers.

AHAM does not make consumer aware on the possible undesirable effects of ionization. AHAM even promotes ozonation on their website as a viable technology but fails to mention such important air cleaning technologies, such as activated carbon and chemisorption.

The EPA ENERGY STAR program should not adopt the relaxed attitude of AHAM with regards to air cleaning technologies. It should not allow air cleaners with ionization or ozonation to qualify for the ENERGY STAR logo.

By proposing to use the AHAM test standard as the basis for EPA ENERGY STAR program for room air cleaners and not allowing for alternative equally valid and independently verifiable performance data to be used to qualify for an EPA ENERGY STAR rating, the EPA effectively excludes manufacturers from the EPA ENERGY STAR Program participation that do not pay AHAM or the AHAM designated test laboratory for an AHAM CADR certification. Since there is only one test laboratory in the world that currently conducts this test, the EPA is endorsing is endorsing quasi monopoly.

To summarize, the EPA ENERGY STAR program would be misguided to use the seriously flawed and outdated AHAM CADR performance test as a basis for its ENERGY STAR program. The EPA ENERGY STAR Program should hold off from extending the ENERGY STAR program to room air cleaners, until a satisfactory performance test can be developed. Basing the ENERGY STAR program on a performance test as seriously flawed as that of AHAM will hurt the credibility of the ENERGY STAR program.

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