



U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, DC 20207

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March 21, 2003

Mr. Thomas L. Wollan
Managing Engineer, Engineering Services
Underwriters Laboratories Inc.
12 Laboratory Drive, P.O. Box 13995
Research Triangle Park, NC 27709-3995

Re: UL 507 – Electric Fans

Dear Mr. Wollan:

The U.S. Consumer Product Safety Commission (CPSC) staff has reviewed the February 14, 2003 report of the UL 507 Supply Cord Working Group teleconference. The teleconference was held on February 11, 2003 to address the potential fire and shock hazards associated with power cords of portable electric fans. We noted several points that do not accurately reflect the CPSC staff position, which are discussed below. We request that the report be revised and that this letter be distributed to all working group members.

In the second paragraph, the meeting report states that the 43 In-depth Investigation (IDI) reports provided by CPSC “do not relate to the issues raised by CPSC.” CPSC staff does not agree with this statement. Please refer to summary Table 1 (IDIs Involving Power Supply Cord) that was attached to the CPSC letter to UL dated March 12, 2002 (copy attached). All of the IDIs summarized in Table 1 except one relate to cord failures (cord being frayed, bared, beaded as a result of being stepped on, pinched, crimped, etc.). The one exception is IDI 900514CCC3423, which relates to the plug of a fan power cord that caused the cord to short and ignite a curtain:

In the third paragraph, it is stated that AHAM members noted that some of the 63 incidents identified in the March 12, 2002 letter to UL that were lumped into the category of “cord related fires” (by CPSC’s Hazard Analysis Division) were contradictory. In the sentence that follows this statement, the report notes remarks by CPSC staff. We find the reporting of these remarks to be incomplete and misleading. A more accurate characterization of the 63 IDIs is reported in the second paragraph of the March 12, 2002 CPSC letter.

In the fourth paragraph, the report states “AHAM members noted that some studies have shown that AFCIs or LCDIs have some use but will not address many of the issues that CPSC raised.” It should be noted that CPSC staff disagrees with AHAM’s position. CPSC staff believes

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that AFCI and LCDI devices could have reduced the risk of fire reported in almost all of the CPSC reports related to power cords, by interrupting power when they sensed a damaged cord.

The fourth paragraph also attributes a statement to CPSC staff that IDIs are very limited and do not provide substantial information on the problems. On the contrary, IDIs provide the best available information on the problems. With regard to the statement that there was general agreement that the original solution presented by CPSC staff (jacketed cord) was not the solution to this problem, this is not the position of the CPSC staff. CPSC staff continues to recommend that power supply cords for portable fans should be a more rugged, jacketed type, as opposed to parallel cords that lack sufficient mechanical properties to resist the conditions anticipated with use and storage.

The last issue addressed in the report, involving wiring between the motor and the base on oscillating fans, was not adequately discussed in the teleconference due to limited time. The issue was deferred for the next Working Group meeting. Therefore, the reporting in your last paragraph is incomplete and should be deleted.

Thank you for providing us with this opportunity to comment on the meeting report. We look forward to participating in further discussions on this matter. The views expressed in this letter are those of the CPSC staff and have not been reviewed or considered by the Commission.

Sincerely,

Anna L. Luo
Electrical Engineer
Directorate for Engineering Sciences

Enclosure

cc: Wayne Morris, AHAM



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February 14, 2003

Subject 507

To: STP Members for UL 507, Electric Fans
Other Invited Guests

Subject: Meeting Report on UL 507 Supply Cord Working Group

On Tuesday, February 11, 2003, the UL 507 Supply Cord Working Group met by telephone conference call to discuss cord and cord set related issues prior to the UL 507 STP meeting. The meeting was chaired by Tom Wollan and Chante' White of UL. In addition, Deborah Jennings-Conner from UL RTP assisted. Those people present included: Gary Beideman and Scott Mohler, Lasko; Lee Crawford, The Holmes Group; Glen Ediger and Charles Graber, Vornado; John Seaman, Bemis; Pat Curran and Andrew Deionno, Applica; Anna Luo and Tim Smith, CPSC; Wayne Morris and Richard Cripps of AHAM.

The purpose of the call was to discuss issues related to the CPSC letter to UL requesting consideration of changes to UL 507. In that letter, CPSC requested that UL change UL 507 to require a more heavy duty cord set, possibly using jacketed cord material. In addition, CPSC reported on possible problems with oscillating fans that might result in wear to the wiring between base and motor. CPSC presented AHAM and UL with copies of 43 In-Depth Investigation (IDI) reports on fans. During discussion, it was pointed out that when these IDI's are viewed in detail, many of the incidents do not relate to the issues raised by CPSC.

During the conference call, UL asked Anna Luo to speak to the CPSC letter and explain the proposal that was made. Ms. Luo mentioned that CPSC conducted an investigation into fires involving fans. The Hazard Identification Department at CPSC estimated that there were 4500 fires, involving several deaths, 270 injuries and \$50 million in property damage each year. In following, CPSC conducted a survey of all IDI's received between 1990 and 2000. They found 243 incidents involving fans. Of these 110 mentioned motors as the cause, 63 mentioned cord sets, and in 62 the cause could not be determined. The other 8 incidents mentioned other causes. Of the 63 incidents involving cords, CPSC further discounted these to 43 incidents by removing those for which the cause was either obviously not the cord or it may have involved an extension cord. AHAM members noted that some of the 63 IDI's that were lumped into "cord related fires" were contradictory (i.e. the IDI said it was "receptacle or other based" and this was still included in the "cord related fires" category). Ms. Luo cautioned that even though some of the incidents may have mentioned the motor as the primary cause, in many fires the motor is all that remains of the fan after the fire and the cause of the fire could have actually been something else in the fan or external to the fan.

UL asked CPSC what they were suggesting as a potential solution to the problems with the cord set. Ms. Luo noted that a proposal had been submitted by a manufacturer, to the National Electric Code to require AFCI or LCDI devices on all single-phase cord connected fans. AHAM members noted that some studies have shown that AFCI's or LCDI's may have some use but will not address many of the issues that CPSC raised. Both UL and CPSC seemed to agree that we should not proceed to add devices without understanding what solutions they offer. Another Working Group member noted that in some of the

IDI's, the extension cord is mentioned as the source of the problem and either a LCDI or AFCI mounted in the fan plug/cord would not protect against problems in an extension cord or receptacle. Another member noted that AFCI's or LCDI's might not protect against resistive heating difficulties. It was noted also noted that in many of the IDI's the photographs are obscured and therefore are not of value when evaluating the potential problem. Ms. Luo noted that the IDI's are very limited and do not provide substantial information on the problems. There was general agreement that the original solution presented by CPSC (jacketed cord) was not the solution to this problem.

Concern was expressed with regard to the current verbiage of the NEC cord proposal. Specifically, its use of the words "single phase cord and plug connected fans" when referencing affected products. The UL 507 definition of cord-connected fans encompasses a wide variety of products including: rangehoods, desk fans, stand fans, air filtering appliances (air cleaners), box fans, portable evaporative coolers, large industrial fans, and deodorizers. Whereas the current CPSC IDI's pertain only to desk fans, stand fans, and box fans. The working group was in mutual consensus that additional clarification regarding the actual intent of NEC proposal is necessary.

As a result of this discussion on fan supply cords, the following list of action items was developed:

1. AHAM will submit a FOIA request on air cleaners to the CPSC, in order to ascertain if this product type involved similar incidents as cord-connected electric "fans".
2. AHAM will provide information regarding the numbers of fans and air cleaners shipped in the US annually, for the time period including 1990-2000.
3. AHAM will review the table of 43 IDI's and comment on incidents that they believe are germane to the topic.
4. CPSC will clarify and document the specific product types that are of concern to them, knowing that there are a wide variety of products not affected by the IDI's that are covered by UL 507.
5. CPSC will provide additional information on the existing IDI's to improve the quality of the photographs as requested for further research. These requests (from AHAM) must be specific with regard to IDI reference number.
6. CPSC will provide their internal report on "fans" to members of this working group, as soon as, it is available.
7. UL will contact their research department to ascertain what information exists on the use of AFCI or LCDI devices, and what they will and will not do to protect consumers from the hazards discussed.

CPSC noted that there additionally existed many instances of fires that were documented as a result of the fan motor. UL pointed out that changes have been made to the UL requirements for thermally protected motors and that these changes are effective March 28, 2003. It was stated that analysis of these incidents should take into consideration the effects this change will have on future performance.

The issue of wiring on oscillating fans was briefly discussed. It was noted that a few incidents involved oscillating fans and the electrical connection between motor and base. Some reports point to an interference or abrasion of the wiring between motor and base. Ms. Luo requested that UL consider changes to UL 507 to require additional design or testing requirements to avoid this problem. Questions were asked as to whether this was a design issue or an isolated manufacturing issue. Ms. Luo did not have an opinion on the subject.

The conference call was adjourned at 1:00 p.m. The Working Group will report to the STP on this subject during the annual meeting, February 28, 2003.

Best Regards –

Chante' White
Underwriters Laboratories Inc.

Tom Wollan
Underwriters Laboratories Inc.