LOG OF MEETING
DIRECTORATE FOR ENGINEERING SCIENCES

SUBJECT: CPSC Meeting to Discuss Retroreflective and Extent of Coverage Issues for the CPSC Bicycle Helmet Standard

DATE OF MEETING: June 5, 1995 **PLACE:** CPSC Headquarters 4330 East West Towers, Bethesda, MD, Room 410

LOG ENTRY SOURCE: Scott Heh, ESME

COMMISSION ATTENDEES: Scott Heh-ESME, Celestine Trainor-ESHF, Andrew Stadnik-ES, Suad Nakamura-EHHE, Deborah Tinsworth-EHHA, Terry Karels-ECSS, George Sushinsky-LSEL, Frank Vitaliti-LSEL,

NON-COMMISSION ATTENDEES: Larry Buckley-3M, David Engler-3M, Lori Kuller-3M, Joe Osterstetter-3M, Randy Swart-Bicycle Helmet Safety Institute, Dean Fisher-Bell Sports, Don L'Heureux-Bell Sports, John Muhlner-Giro Sports, Dan Switalski-Trek Bicycle, Thom Parks-Specialized Bicycle, Todd Leeuwenburgh-PSL, Dan Thomas-Snell Memorial Foundation, Blue Goulding-Star/Headstrong, Daniel LaFlamme-Denrich Sporting Goods, Ed Becker-Snell Memorial Foundation

SUMMARY OF MEETING

The meeting opened with a discussion of possible retroreflective performance requirements that could be considered for the CPSC mandatory bicycle helmet standard. Larry Buckley (3M) summarized the results of observations made at the nighttime demonstration of various reflective bike helmets that was held on June 4, 1995. Twelve different bike helmets were observed. These helmets were mocked up with retroreflective material incorporating either exposed lens, prismatic, or encapsulated lens technology. A summary of the data results from the demonstration is shown in Table 1 on the next page. The table shows the viewing distance recorded from the night before and the performance of each treatment when tested in accordance to ASTM Standard E 1501-Nighttime Photometric Performance of Retroreflective Pedestrian Marking for Visibility Enhancement.

The group discussed a number of issues regarding potential requirements for retroreflective helmets. It was pointed out that the materials that have the best retroreflective performance are currently not available in tapes with flexibility and adhesion characteristics that are desired for application to bicycle helmets. The 3M representative stated that he did not believe it to be a major challenge to develop retroreflective tapes that would satisfy these requirements.

Other issues that some members of the group said must be considered are the fashion and cost implications to requiring retroreflective tape on helmets. Considering the vast majority of people never ride their bike at night, and a large portion of riders do not wear helmets, a requirement for helmets to have retroreflective material would address only a small percentage of bike riders.

Other Helmet Issues:

The group also discussed approaches for specifying impact test lines on bicycle helmets. Experienced test engineers compared the test line specifications of the ANSI, ASTM, and Snell bicycle helmet standards. The pros and cons of specifying a impact line in combination with an extent of coverage line were compared to specifying only an impact line.

Table 1

Product Technology	Initial Brightness cd/lux/m^2	ASTM E1501 @ 230m (Avg)	ASTM E1501 @ 70m (Avg)	Night Viewing distance (Mini Van)	Night Viewing distance (lg. 4 door sdn)
Exposed Lens - 3/8"	560	1.15	.34	1000 feet	500 feet
Prismatic white - 3/8"	540	1.36	.40	1000 feet	1000 feet
Prismatic yellow - 3/8"	480	1.10	.37	750 feet	750 feet
Encapsulated Lens - 3/8"	280	.75	.23	Not Tested in Viewing	
Exposed Lens - 1/2"	560	1.50	.45	1000 feet	800 feet
Prismatic white - 1/2"	540	2.02	.68	1000 feet	1000 feet
Prismatic yellow - 1/2"	480	1.56	.50	1000 feet	1000 feet
Encapsulated Lens - 1/2"	280	1.21	.39	Not Tested in Viewing	
Encapsulated Lens - 3/8" wide - Origin China	N/A	N/A	N/A	<100 feet	<100 feet
Encapsulated Lens - Red Color - 20 years Old	N/A	N/A	N/A	500 feet	<250 feet

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