

Program Concept for Total Inward Leakage (TIL) Performance Requirements and Test Methods

1.0 Background:

Recent trends in the field of personal protective equipment (PPE) testing have focused on the need to effectively evaluate PPE systems performance for total inward leakage (TIL) under laboratory conditions. While total inward leakage testing performed under laboratory conditions does not necessarily reflect expected actual field level PPE performance it does represent a criterion for performance that influences PPE design. Although TIL testing is intended to quantify the ability of respirators to fit a range of individuals, it is not intended to replace individual fit testing as mandated by OSHA.

The TIL performance requirements will not be the same as present APF values. It is anticipated the performance requirement will be based on state of the art respirator performance and will account for differences between laboratory test conditions and workplace conditions.

The TIL test will use a panel of subjects from a NIOSH updated Los Alamos panel, in sizes specified by the respirator manufacturer. The exercises will be those used by OSHA in current fit tests but may be augmented by others now used by NIOSH in other tests conducted in accordance with 42 CFR Part 84.

The NPPTL TIL Program will establish TIL laboratory test capability for PPE. The program will address this important performance requirement beginning with half-mask respirators, including elastomeric and filtering facepiece styles. The half-mask respirator TIL project spans a period of approximately 42 months concluding with the finalization of the concept for pre-publication review by December 2006.

Major aspects of the half-mask respirator TIL Test Project include:

- Development of respirator TIL requirements and test protocol,
- Establishment of a TIL test facility,
- Benchmark and consistency testing,
- Peer Review, and
- Public Meetings.

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1.1 TIL Program Goal:

Develop an NPPTL Total Inward Leakage testing capability for performance testing of Personal Protective Equipment (PPE) including all classes of respirators and protective garments.

1.2 TIL Program Description:

The NPPTL TIL Program will be organized into multiple projects to establish TIL performance requirements and testing capability for respirators and protective garments. The initial TIL project will address half-mask respirator requirements and testing. Other classes of respirators will be incorporated into the program following completion of the half-mask project.

1.3 TIL Test Program – Respirator Project:

The TIL Test Program – Half-mask Respirator Project is organized into three phases. The project phases and objectives of each phase are:

Phase 1: Investigative/Concept Draft

- Gather and review existing TIL respirator information,
- Review existing TIL test equipment capabilities and technical specifications,
- Identify a Peer Review Team composed of manufacturers, users, academia and government,
- Develop initial TIL Concept addressing performance requirements and test protocol,
- Establish technical specification for TIL test facility.

Phase 2: Test Facility/Benchmark Testing

- Establish NPPTL TIL test facility,
- Perform Benchmark testing to establish state of the art Respirator performance,
- Continue development of TIL Concept: requirement and protocol,
- Identify Draft Implementation Plan.

Phase 3: Consistency Testing/Implementation Plan

- Conduct validation testing for TIL facility,
- Finalize Implementation Plan,

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- Finalize TIL concept: requirement and protocol

1.4 Half-mask Project Objective and Milestones

Phase	Dates	Objectives	Milestones
<u>Phase 1:</u> Investigative/ Concept Draft	Mar. 04 Through July 04	<ul style="list-style-type: none"> • Gather Information, • Review test equipment • Identify Peer Review Team, • Develop TIL concept, • Establish Facility Specification 	<ul style="list-style-type: none"> • TIL Concept – May 04 • Facility Specification- May 04 • Peer Review – April & July 04 • Public Meeting - June 04
<u>Phase 2:</u> Test Facility/ Benchmark Testing	June 04 Through April 06	<ul style="list-style-type: none"> • Establish Test Facility • Benchmark tests, • Continued Concept development, • Draft Implementation plan 	<ul style="list-style-type: none"> • Draft Implementation Plan – August 04 • Peer Review – Oct 04 • Public Meeting- September 04 • Test Facility Complete – January 2005 • Complete testing - April 06
<u>Phase 3:</u> Validation testing/Implementation plan	October 05 Through December 06	<ul style="list-style-type: none"> • Validation Testing, • Implementation plan • Final TIL concept. 	<ul style="list-style-type: none"> • Implementation Plan – August 06 • Public meeting - Oct 06 • Final TIL Concept – December 06