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*APPLICATION NUMBER:*

**22-387**

**CHEMISTRY REVIEW(S)**

## CMC BRANCH CHIEF MEMORANDUM

**To:** NDA 22-387  
**From:** Ramesh Sood, Ph.D., Branch Chief, ONDQA  
**Date:** 28-Jul-2009  
**Drug:** Tyvaso (treprostinil) inhalation solution  
**Route of administration:** Oral Inhalation  
**Strength:** 0.6 mg/mL  
**Subject:** "Approval" recommendation for NDA 22-387

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Treprostinil for inhalation (Tyvaso™) is being developed as an alternative to the subcutaneously and intravenously delivered treprostinil solution (Remodulin Injection, NDA 21-272, approved 22-May-2002). Treprostinil is the free acid of a synthetic tricyclic benzindene analogue of prostacyclin. The proposed indication is for the treatment of pulmonary arterial hypertension (WHO Group I) in patients with New York Heart Association (NYHA) Class III — symptoms. **b(4)**

Several pending CMC issues were identified in my previous memo. The company has addressed these issues to the reviewer's satisfaction. The issues related to the drug substance have been resolved.

The facilities related to the manufacturing of the drug product and described in the NDA have been recommended for approval by the Office of Compliance. Categorical exclusion from an environmental assessment requested by the applicant is acceptable.

An acceptable recommendation is made by the microbiology reviewer.

**Recommended action:** The application is recommended for "APPROVAL" from CMC perspective.

Linked Applications	Submission Type/Number	Sponsor Name	Drug Name / Subject
NDA 22387	ORIG 1	UNITED THERAPEUTICS CORP	TREPROSTINIL FOR INHALATION

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/s/

RAMESH K SOOD  
07/28/2009



**NDA 22-387**

**Tyvaso (treprostinil)  
Inhalation Solution**

**United Therapeutics Corporation**

**Monica D. Cooper, Ph.D.  
ONDQA Pre-Marketing Assessment  
Division I/Branch I**

**Reviewed for the Division of Cardiovascular  
and Renal Products, HFD-110**



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