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Facility Name: **PRAXAIR HYDROGEN PLANT**

Application Number: **02-2171**

Date: **July 22, 1998**

GENERAL PERMIT CONDITIONS

TERMINATION OF PERMIT TO INSTALL

Substantial construction for installation must take place within 18 months of the effective date of this permit. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

NOTICE OF INSPECTION

The Director of the Ohio Environmental Protection Agency, or his authorized representatives, may enter upon the premises of the above-named applicant during construction and operation at any reasonable time for the purpose of making inspections, conducting tests, or to examine records or reports pertaining to the construction, modification or installation of the source(s) of environmental pollutants identified within this permit.

CONSTRUCTION OF NEW SOURCE(S)

The proposed source(s) shall be constructed in strict accordance with the plans and application submitted for this permit to the Director of the Ohio Environmental Protection Agency. There may be no deviation from the approved plans without the express, written approval of the Agency. Any deviations from the approved plans or the above conditions may lead to such sanctions and penalties as provided under Ohio law. Approval of these plans does not constitute an assurance that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources are inadequate or cannot meet applicable standards.

If the construction of the proposed source(s) has already begun or has been completed prior to the date the Director of the Ohio Environmental Protection Agency approves the permit application and plans, the approval does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the approved plans. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of Ohio Administrative Code

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(OAC) Rule 3745-31-02. Furthermore, issuance of the Permit to Install does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Approval of the plans in any case is not to be construed as an approval of the facility as constructed and/or completed. Moreover, issuance of the Permit to Install is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities prove to be inadequate or cannot meet applicable standards.

PERMIT TO INSTALL FEE

In accordance with Ohio Revised Code 3745.11, the specified Permit to Install fee must be remitted within 15 days of the effective date of this permit to install.

PUBLIC DISCLOSURE

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC Rule 3745-49-03.

APPLICABILITY

This Permit to Install is applicable only to the contaminant sources identified. Separate application must be made to the Director for the installation or modification of any other contaminant sources.

BEST AVAILABLE TECHNOLOGY

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

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PERMIT TO OPERATE APPLICATION

A Permit to Operate application must be submitted to the appropriate field office for each air contaminant source in this Permit to Install. In accordance with OAC Rule 3745-35-02, the application shall be made at least 90 days prior to start-up of the source.

NINETY DAY OPERATING PERIOD

The facility will be permitted to operate during a 90-day period in accordance with OAC Rule 3745-35-02(C)(4)(b). The purpose of this period of operation is to fulfill the performance tests conditions used in the determination of compliance with the provisions of this Permit to Install or other applicable Ohio EPA rules.

SOURCE OPERATION AFTER COMPLETION OF CONSTRUCTION

This facility is permitted to operate each source described by this permit to install for period of up to one year from the date the source commenced operation. This permission to operate is granted only if the facility complies with all requirements contained in this permit and all applicable air pollution laws, regulations, and policies.

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AIR EMISSION SUMMARY

The air contaminant emissions units listed below comprise the Permit to Install for **Praxair Inc.** located in **Lake** County. The emissions units listed below shall not exceed the emission limits/control requirements contained in the table. This condition in no way limits the applicability of any other state or federal regulations. Additionally, this condition does not limit the applicability of additional special terms and conditions of this permit.

w/1.85 MMBTU/HR NG
combustion unit.

<u>Ohio</u> <u>EPA</u> <u>Source</u> <u>Number</u>	<u>Source</u> <u>Identification</u> <u>Description</u>	<u>BAT</u> <u>Determination</u>	<u>Applicable</u> <u>Federal &</u> <u>OAC Rules</u>
P001	Hydrogen Production from natural gas feed stock by steam methane reforming process	Recirculation & use of byproduct tail gas; reformer start ups fired at reduced rates to reduce CO emission rate	3745-31-05

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Permit
Allowable
Mass
Emissions
and/or
Control
/Usage
Requirements

13.0
LBS/hr
CO and
4.0
TPY.

SUMMARY
TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS

<u>Pollutant</u>	<u>Tons/Year</u>
CO	4.0 TPY

Note: Natural gas & steam are combined at high temperatures in the process of catalyst within the steam methane reformer to produce H₂; Resulting gas is SYNGAS (H₂, H₂O CO₂).

MAINTENANCE OF EQUIPMENT

This source and its associated air pollution control system(s) shall be maintained regularly in accordance with good engineering practices and the recommendations of the respective manufacturers in order to minimize air contaminant emissions.

MALFUNCTION/ABATEMENT

In accordance with OAC RULE 3745-15-06, any malfunction of the source(s) or associated air pollution control system(s) shall be reported immediately to the **Ohio EPA, Northeast District Office,**

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2110 E. Aurora Road, Twinsburg, Ohio 44087.

Except as provided by OAC Rule 3745-15-06(A)(3), scheduled maintenance of air pollution control equipment that requires the shutdown or bypassing of air pollution control system(s) must be accompanied by the shutdown of the associated air pollution sources.

AIR POLLUTION NUISANCES PROHIBITED

The air contaminant source(s) identified in this permit may not cause a public nuisance in violation of OAC Rule 3745-15-07.

CONSTRUCTION COMPLIANCE CERTIFICATION

The applicant shall provide Ohio EPA with a written certification (see enclosed form) that the facility has been constructed in accordance with the Permit to Install application and the terms and conditions of the Permit to Install. The certification shall be provided to Ohio EPA upon completion of construction but prior to startup of the source.

ADDITIONAL SPECIAL TERMS AND CONDITIONS

INTRODUCTION:

This is a permit to install for a methane reforming process to produce hydrogen gas using natural gas as fuel and feedstock. Carbon Monoxide is emitted during the very first start-up and during restarts.

A. EMISSION LIMITATIONS AND CONTROL REQUIREMENTS:

Praxair, Inc. shall emit no more than 13.0 lbs/hr of CO and 4.0 tons per year including restarts and initial start-up.

B. OPERATIONAL RESTRICTIONS:

1. Praxair, Inc. shall limit the venting during restarts for this emission unit to 500 hours per year, for streams containing carbon monoxide.
2. In accordance with best available technology requirements:

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the tailgas byproduct of this methane reformer shall be recirculated and used to supplement natural gas as fuel; and,

all reformer startups shall be fired at 25% of the normal firing rate, which shall be preprogrammed into the restart software, to reduce carbon monoxide emissions.

C. MONITORING AND RECORDKEEPING REQUIREMENTS:

Praxair, Inc. shall keep records of the number of hours of venting during restarts for streams containing carbon monoxide for this methane reformer.

D. REPORTING REQUIREMENTS

Praxair, Inc. shall inform the Ohio EPA of any exceedance of any limit in this permit.

E. TESTING REQUIREMENTS:

EMISSION LIMITATION:

13.0 lbs CO per hour

APPLICABLE COMPLIANCE METHOD:

recordkeeping as required is permit; Method 10 if required by Ohio EPA

EMISSION LIMITATION:

4.0 ton per year

APPLICABLE COMPLIANCE METHOD:

13 lbs/hr x the annual sum of hours for all restarts of the reformer divided by 2000

F. MISCELLANEOUS REQUIREMENTS:

None

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