



## DIVISION OF WATER RESOURCES

Bill Ritter, Jr.  
Governor

Mike King  
Executive Director

Dick Wolfe, P.E.  
Director/State Engineer

### POLICY MEMORANDUM 2010-3

**SUBJECT: Geothermal Rules - Rule 8.3.3 regarding types of fluids approved for use as circulating medium in Type A-CLH or Type A-CLV wells.**

**Purpose:**

The purpose of this policy is to approve R-410A (Pentafluoroethane / Difluoromethane mixture) as a substitute/alternative refrigerant for R-22 or R-407C to be used as a circulating medium in loop fields of Type A-CLH or Type A-CLV geexchange systems.

**Background:**

Rule 8.3.3 specifies the types of fluids approved for use in loop fields of Type A-CLH or Type A-CLV geexchange systems. The refrigerant R-22 is approved by Rule 8.3.3.g., and R-407C is approved by State Engineer Policy Memorandum 2008-02. R-22 is a cost effective and efficient circulating medium and has been a widely used refrigerant in direct exchange (DX) heat pumps and air conditioning systems for more than four decades. R-22 is included in the list of the ozone depleting compounds addressed by the 1987 Montreal Protocol and subsequent amendments. The protocol prohibits the use of R-22 in new equipment after the date of January 1, 2010.

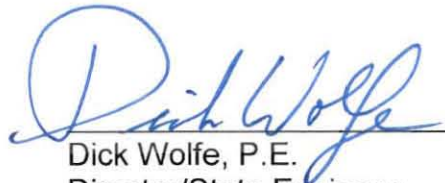
The Environmental Protection Agency (EPA) has identified a number of acceptable substitutes for R-22 in household and light commercial air-conditioning uses. R-410A (Pentafluoroethane / Difluoromethane mixture), with trade names which include but are not necessarily limited to Puron, Genetron R410A, AZ-20 and Forane (R) 410A, is one of the EPA identified substitutes for R-22. According to the Material Safety Data Sheet for R-410A, the compound is non-flammable and "practically non-toxic." R-410A has been suggested as a substitute or alternative to the use of R-22 in geexchange systems as approved in Rule 8.3.3.

Office of the State Engineer

**POLICY:**

(R) 410A (Pentafluoroethane / Difluoromethane mixture) is approved as a substitute or alternative to the use of R-22 or R-407C as a circulating fluid in Type A-CLH or Type A-CLV geoechange systems as specified in Rule 8.3.3.g of the Geothermal Rules.

This policy is effective immediately and shall be revoked only in writing.

 5-19-10  
Dick Wolfe, P.E. Date  
Director/State Engineer  
Colorado Division of Water Resources