CLAIMS

1. A process for producing phenol and/or cyclohexanone, said process comprising:

(a) contacting cyclohexylbenzene with an oxygen-containing gas under conditions effective to produce an oxidation effluent containing cyclohexylbenzene hydroperoxide;

(b) contacting at least part of said oxidation effluent containing cyclohexylbenzene hydroperoxide with a cleavage catalyst under conditions effective to produce a cleavage effluent containing phenol and cyclohexanone,

wherein at least one of said oxidation effluent and said cleavage effluent contains at least one phenylcyclohexanol as a by-product; and

(c) contacting at least part of said at least one effluent containing said at least one phenylcyclohexanol with a dehydration catalyst comprising a molecular sieve of the MCM-22 family under conditions effective to convert at least part of said phenylcyclohexanol to phenylcyclohexene.

2. The process of claim 1, wherein said at least one ~~by-product~~ phenylcyclohexanol comprises one or more of 2-phenyl-1-cyclohexanol, 3-phenyl-1-cyclohexanol, and 4-phenyl-1-cyclohexanol.

3. The process of claim 1 or claim 2, wherein said molecular sieve of the MCM-22 family comprises MCM-56.

4. The process of any one of the preceding claims, wherein said conditions in said contacting step (c) comprise a temperature of 25°C to 200°C.

5. The process of any one of the preceding claims, further comprising:

(d) contacting at least part of said phenylcyclohexene produced in said contacting step (c) with hydrogen under conditions effective to convert at least part of said phenylcyclohexene to cyclohexylbenzene and to obtain a hydrogenation effluent.

6. The process of claim 5, wherein said conditions in said contacting step (d) comprise a temperature of 80°C to 150°C.