CLAIMS

1. A method of treating a residue stream ~~obtained~~ from ~~a process for~~ the production of bisphenol-A, the method comprising:

(a) contacting the residue stream with an aqueous solution of a base under conditions effective to hydrolyze at least part of said residue stream into acetone and phenol and produce an effluent stream;

(b) recovering acetone from the effluent stream to produce a phenol-containing mixed phase stream which is substantially free of acetone and which contains water and unhydrolyzed heavy organic compounds;

(c) treating the phenol-containing mixed phase stream with a water-immiscible organic solvent to extract phenol and unhydrolyzed heavy organic compounds into said solvent and produce an organic phase containing said solvent, phenol and unhydrolyzed heavy aromatic compounds and an aqueous phase with reduced concentrations of phenol and unhydrolyzed heavy organic compounds; ~~and~~

(d) recovering at least part of the phenol and the organic solvent from the organic phase.; and

(e) purging at least part of the remaining unhydrolyzed heavy organic compounds.

2. The method of claim 1, wherein acetone is recovered from the effluent stream in (b) by distillation.

3. The method of claim 1 ~~or claim 2~~, wherein at least part of the acetone recovered in (b) is recycled to the production of bisphenol-A.

4. The method of ~~any preceding~~ claim 1, wherein the water-immiscible organic solvent is selected from cumene, toluene, a mixture of cumene and alpha methyl styrene (AMS), ethers, ketones, and acetate esters.

5. The method of ~~any preceding~~ claim 1, wherein at least a portion of the aqueous phase produced in (c) is recycled to the contacting step (a).

6. The method of ~~any preceding~~ claim 1, wherein the phenol-containing aqueous stream from (b) is combined with an acid to reduce the pH of said stream to about 2 to about 8~~, preferably 5 to 7,~~ prior to said treating step (c).

7. The method of claim 6, wherein the pH of the phenol-containing aqueous stream from (b) is reduced to about 5 to about 7 prior to said treating step (c).

~~7.~~8. The method of ~~any preceding~~ claim 1, wherein the recovering (d) is effected by one or more distillation steps.

~~8.~~9. The method of ~~any preceding~~ claim 1, wherein at least part of the phenol recovered in (d) is recycled to the production of bisphenol-A.

~~9.~~10. The method of ~~any preceding~~ claim 1, wherein at least part of the solvent recovered in (d) is recycled to the treating (c).

~~10. The method of any preceding claim, wherein the residue stream is obtained from a process for producing bisphenol-A comprising:~~

~~(i) condensing acetone with a molar excess of phenol in the presence of a catalyst under conditions to produce a product stream comprising bisphenol-A and isomers thereof, unreacted phenol, trisphenols and other heavy aromatic compounds; and~~

~~(ii) recovering part of the bisphenol-A and unreacted phenol from said product stream to leave said residue stream comprising unreacted phenol, bisphenol-A and isomers thereof, trisphenols, and other heavy aromatic compounds.~~

~~11. The method of claim 10 and further comprising:~~

~~(iii) crystallizing said product stream to recover bisphenol-A and leave a mother liquor;~~

~~(iv) distilling at least a portion of said mother liquor in a phenol recovery column to remove unreacted phenol from said mother liquor and leave said residue stream;~~

(v) distilling said organic phase in a solvent recovery column to remove said organic solvent as an overhead stream.

12. The method of claim 11, wherein a bottoms stream comprising phenol and unhydrolyzed heavy organic compounds is removed from said solvent recovery column and at least a portion of said bottoms stream is recycled to the phenol recovery column to recover phenol therefrom.

13. The method of claim 12, wherein at least part of the bottoms stream is further distilled to recover a stream rich in unhydrolyzed heavy organic compounds.

14. The method of claim 11, wherein phenol is recovered as a side stream from said solvent recovery column leaving a bottoms stream rich in unhydrolyzed heavy organic compounds.

15. The method of any one of claims 12 to 14, wherein at least part of the bottoms stream is purged.