CLAIMS

1. A composition comprising:

   a. at least 50 wt% of cyclohexylbenzene;

   b. no greater than ~~80~~ 49.9 wt% of cyclo-hexyl-1-phenyl-1-hydroperoxide; and

   c. 0.1 wt% to 10 wt% of at least one of: cyclohexyl-1-phenyl-2-hydroperoxide, cyclohexyl-1-phenyl-3-hydroperoxide, cyclohexyl-1-phenyl-4-hydroperoxide, cyclopentyl-1-methyl-2-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-3-phenyl-3-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-3-hydroperoxide; and cyclohexyl-1-phenyl-1,2-dihydroperoxide, cyclohexyl-1-phenyl-1,3-dihydroperoxide, cyclohexyl-1-phenyl-1,4-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-1,2-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,3-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,4-dihydroperoxide and cyclopentyl-1-methyl-2-phenyl-2,5-dihydroperoxide,

   wherein the wt%s are based upon the total weight of the composition.

2. The composition of claim 1, wherein the composition comprises 0.5 wt % to 5 wt% of at least one of: cyclohexyl-1-phenyl-2-hydroperoxide, cyclohexyl-1-phenyl-3-hydroperoxide, cyclohexyl-1-phenyl-4-hydroperoxide, cyclopentyl-1-methyl-2-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-3-phenyl-3-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-3-hydroperoxide; and cyclohexyl-1-phenyl-1,2-dihydroperoxide, cyclohexyl-1-phenyl-1,3-dihydroperoxide, cyclohexyl-1-phenyl-1,4-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-1,2-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,3-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,4-dihydroperoxide and cyclopentyl-1-methyl-2-phenyl-2,5-dihydroperoxide, wherein the wt%s are based upon the total weight of the composition.

3. The composition of claim 1 or claim 2, wherein the composition comprises 1 wt% to 4 wt% of at least one of: cyclohexyl-1-phenyl-2-hydroperoxide, cyclohexyl-1-phenyl-3-hydroperoxide, cyclohexyl-1-phenyl-4-hydroperoxide, cyclopentyl-1-methyl-2-phenyl-

2-hydroperoxide, cyclopentyl-1-methyl-3-phenyl-3-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-3-hydroperoxide, cyclohexyl-1-phenyl-1,2-dihydroperoxide, cyclohexyl-1-phenyl-1,3-dihydroperoxide, cyclohexyl-1-phenyl-1,4-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-1,2-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,3-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,4-dihydroperoxide and cyclopentyl-1-methyl-2-phenyl-2,5-dihydroperoxide, wherein the wt%s are based upon the total weight of the composition.

4. The composition of claim 1 or claim 2, wherein the composition has 5 wt% to 40 wt% of cyclo-hexyl-1-phenyl-1-hydroperoxide, wherein the wt%s are based upon the total weight of the composition.

5. The composition of claim 1 or claim 2, wherein the composition has 5 wt% to 30 wt% of cyclo-hexyl-1-phenyl-1-hydroperoxide, wherein the wt%s are based upon the total weight of the composition.

6. The composition of claim 5, wherein the composition comprises at least 60 wt% cyclohexylbenzene, the wt% based upon the total weight of the composition.

7. The composition of claim 1 or claim 2, wherein the composition has 10 wt% to 25 wt% of cyclo-hexyl-1-phenyl-1-hydroperoxide, wherein the wt%s are based upon the total weight of the composition.

8. The composition of claim 7, wherein the composition comprises at least 65 wt% cyclohexylbenzene, the wt% based upon the total weight of the composition.

9. ~~A~~ The composition ~~comprising~~ of claim 1, wherein the composition comprises:

a. at least 60 wt% of cyclohexylbenzene; ~~and~~

b. 5 wt% to 30 wt% of cyclo-hexyl-1-phenyl-1-hydroperoxide; and

c. 0.1 wt% to 10 wt% of at least one of: cyclohexyl-1-phenyl-2-hydroperoxide, cyclohexyl-1-phenyl-3-hydroperoxide, cyclohexyl-1-phenyl-4-hydroperoxide, cyclopentyl-1-methyl-2-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-3-phenyl-3-hydroperoxide,

cyclopentyl-1-methyl-1-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-3-hydroperoxide, cyclohexyl-1-phenyl-1,2-dihydroperoxide, cyclohexyl-1-phenyl-1,3-dihydroperoxide, cyclohexyl-1-phenyl-1,4-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-1,2-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,3-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,4-dihydroperoxide and cyclopentyl-1-methyl-2-phenyl-2,5-dihydroperoxide,

wherein the wt%s are based upon the total weight of the composition.

10. The composition of claim 9, wherein the composition comprises 0.5 wt% to 5 wt% of at least one of: cyclohexyl-1-phenyl-2-hydroperoxide, cyclohexyl-1-phenyl-3-hydroperoxide, cyclohexyl-1-phenyl-4-hydroperoxide, cyclopentyl-1-methyl-2-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-3-phenyl-3-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-3-hydroperoxide; cyclohexyl-1-phenyl-1,2-dihydroperoxide, cyclohexyl-1-phenyl-1,3-dihydroperoxide, cyclohexyl-1-phenyl-1,4-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-1,2-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,3-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,4-dihydroperoxide, and cyclopentyl-1-methyl-2-phenyl-2,5-dihydroperoxide, wherein the wt%s are based upon the total weight of the composition.

11. The composition of claim 9 or claim 10, wherein the composition comprises 1 wt% to 4 wt% of at least one of: cyclohexyl-1-phenyl-2-hydroperoxide, cyclohexyl-1-phenyl-3-hydroperoxide, cyclohexyl-1-phenyl-4-hydroperoxide, cyclopentyl-1-methyl-2-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-3-phenyl-3-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-3-hydroperoxide, cyclohexyl-1-phenyl-1,2-dihydroperoxide, cyclohexyl-1-phenyl-1,3-dihydroperoxide, cyclohexyl-1-phenyl-1,4-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-1,2-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,3-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,4-dihydroperoxide, and cyclopentyl-1-methyl-2-phenyl-2,5-dihydroperoxide, wherein the wt%s are based upon the total weight of the composition.

12. The composition of claim ~~13~~ 9 or claim ~~14~~ 10, wherein the composition has 10 wt% to 25 wt% of cyclo-hexyl-1-phenyl-1-hydroperoxide, wherein the wt%s are based

upon the total weight of the composition.

13. The composition of claim 12, wherein the composition comprises at least 65 wt% cyclohexylbenzene, the wt% based upon the total weight of the composition.

14. ~~A~~ The composition ~~comprising~~ of claim 1, wherein the composition comprises:

a. at least 65 wt% of cyclohexylbenzene; ~~and~~

b. 5 wt% to 25 wt% of cyclo-hexyl-1-phenyl-1-hydroperoxide; and

c. 1 wt% to 4 wt% of at least one of: cyclohexyl-1-phenyl-2-hydroperoxide, cyclohexyl-1-phenyl-3-hydroperoxide, cyclohexyl-1-phenyl-4-hydroperoxide, cyclopentyl-1-methyl-2-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-3-phenyl-3-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-2-hydroperoxide, cyclopentyl-1-methyl-1-phenyl-3-hydroperoxide, cyclohexyl-1-phenyl-1,2-dihydroperoxide, cyclohexyl-1-phenyl-1,3-dihydroperoxide, cyclohexyl-1-phenyl-1,4-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-1,2-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,3-dihydroperoxide, cyclopentyl-1-methyl-2-phenyl-2,4-dihydroperoxide, and cyclopentyl-1-methyl-2-phenyl-2,5-dihydroperoxide,

wherein the wt%s are based upon the total weight of the composition.