



PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A01N 43/84, 43/60, 43/56, 43/50, 43/46, 43/40, 43/36 // (A01N 43/84, 47:12, 43:80, 37:34, 35:08, 29:04) (A01N 43/50, 47:12, 43 :80, 37 :34, 35 :08, 29 :04)	A1	(11) International Publication Number: WO 96/38043 (43) International Publication Date: 5 December 1996 (05.12.96)
(21) International Application Number: PCT/US96/07677 (22) International Filing Date: 28 May 1996 (28.05.96) (30) Priority Data: 08/453,001 ✓ 30 May 1995 (30.05.95) US (71) Applicant: BUCKMAN LABORATORIES INTERNA- TIONAL, INC. [US/US]; 1256 North McLean Boulevard, Memphis, TN 38108-0305 (US). (72) Inventors: WHITEMORE, Marilyn, S.; 2026 Widgeon Way Drive, Germantown, TN 38139 (US). GLOVER, Daniel, E.; P.O. Box 251, Brighton, TN 38011 (US). RAYUDU, S., Rao; 9099 Cairn Ridge Drive, Germantown, TN 38139 (US). (74) Agents: PETERSON, Stephen, L.; Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P., 1300 I Street, N.W., Washington, DC 20005-3315 (US) et al.		(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG , SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the</i> <i>claims and to be republished in the event of the receipt of</i> <i>amendments.</i>

(54) Title: POTENTIATION OF BIOCIDAL ACTIVITY USING AN N-ALKYL HETEROCYCLIC COMPOUND**(57) Abstract**

A method for increasing the effectiveness of a microbicide is described. In the method, a microbicide and an N-alkyl heterocyclic compound are applied to a substrate or aqueous system subject to the growth of microorganisms. The N-alkyl heterocyclic compound is applied in an amount effective to increase the microbicidal activity of the microbicide. The N-alkyl heterocyclic compound has formula (I). The variable "n" ranges from 5 to 17, and the heterocyclic ring defined by (a) is a substituted or unsubstituted ring having four to eight members. Microbicidal compositions are described where the microbicide and the N-alkyl heterocyclic compound are present in a combined amount effective to control the growth of at least one microorganism. Methods for controlling the growth of microorganisms on various substrates and in various aqueous systems are also described. The combination of the microbicide and the N-alkyl heterocyclic compound is particularly useful as a microbicide in the leather industry, the lumber industry, the papermaking industry, the textile industry, the agricultural industry, and the coating industry, as well as in industrial process waters.