HAZARDS OF LAUNDRY PRODUCTS USED IN THE NEWBORN NURSERY∗

PUBLISHED reports and unpublished communications to the Committee on Drugs of the American Academy of Pediatrics indicate that substances potentially hazardous to the premature and full-term newborn infant continue to be used in the laundering of clothing, diapers, and bedding for hospital nurseries. In 1962 the Subcommittee on Accidental Poisoning called attention to occurrences of methemoglobinemia in premature and full-term newborn infants whose diapers were autoclaved after a final laundry rinse with the bacteriostatic agent, 3-4-4’ trichlorocarbanilide (TCC).1 Subsequent reports in the pediatric literature confirmed and added to these “epidemics” of neonatal methemoglobinemia2–4 and suggested that aniline—a well-known cause of methemoglobinemia5–resulting from the break-down of TCC during autoclaving, was absorbed from diapers and other nursery clothing through the skin of the infants. Although direct proof of the etiologic role of TCC is lacking, the association is of sufficient concern that the forthcoming Academy manual, Standards and Recommendations for Hospital Care of Newborn Infants, Second Edition, makes reference to the hazards of using TCC. Although a limited and informal survey of hospital nurseries in the United States and Canada indicates that most hospital laundry procedures have abandoned TCC in treating clothing and bed linens of newborn infants, sporadic instances of neonatal methemoglobinemia associated with exposure to this substance still come to the attention of local, state, and national health agencies, manufacturers, and the Committee on Drugs.

In 1967, deaths and severe illness occurred in epidemic form in the newborn nursery of a small Midwestern maternity hospital.6 Investigation revealed that the sodium salt of pentachlorophenol (PCP)—which was present in the antimicrobial neutralizer product used in the final rinse of the laundry process for diapers, infant under-shirts, and crib linens for the nursery—intoxicated babies by percutaneous absorption.7 This sanitizer was specifically not recommended for use in hospital laundries or in a terminal rinse, yet it had been so used for approximately 1 year. Of interest is that TCC was also present in the antimicrobial laundry sanitizer; and, indeed, one of the infants in this nursery had methemoglobinemia.

The laundering process for the newborn nursery can be complex, and most physicians are unaware of the agents involved. Nursery diapers, shirts, and crib linens may be laundered in soap or detergents, bleach, a laundry sour (neutralizing the bleach), and a softener-sanitizer mixture. An editorial comment about the foregoing PCP epidemic stated, “It seems reasonable that physicians in charge of newborn nurseries should have knowledge of procedures used in the laundering of infants’ clothing and bedding, and their approval should be required before changes in routine are made.”8 Nursery physicians frequently do not possess such knowledge; and, they are not consulted before a change in the laundry procedure is implemented, sometimes by purchasing agents or other nonmedical hospital personnel. Although antibacterial agents used in the laundering process are regulated by the U.S. Department of Agriculture9 (not the Food and Drug Administration), this does not mean that they have been tested and found nontoxic for neonates.

It is regrettable that physicians became

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aware of the hazards of TCC and PCP in the newborn nursery after poisoning epidemics occurred. What about newer laundering agents such as enzyme-detergent combinations and optical brighteners? Will these cause poisoning epidemics in the newborn nursery? Do these pose hazards as residues in laundered clothing and crib linen for premature and full-term infants? Industrial illness already has been documented for individuals working with the enzyme concentrate, and there is concern for consumers using enzyme-detergent products. Such considerations extend beyond the laundry procedure to virtually all substances used in and for the newborn nursery. The biology of the premature and full-term neonate demands that even the most innocent-appearing substance in their environment be scrutinized for the possibility of adverse effects. Until data on toxicity are available for various substances which are proposed for introduction into the nursery, clinical judgment would dictate avoiding them.

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†In rural areas even water can be a source (nitrites) for the production of methemoglobinemia.

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