

182 Poultry Processors

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Core Messages

- Poultry processors are exposed to biological hazards: infection of skin abrasions by *Pyogenic coccus* or *Erysipelothrix insidiosa* (Erysipeloid).
- Prurigo-like or scabies-like lesions can develop, mainly in atopics, reacting to *Dermatophagoides* spp. or *Dermanyssus gallinae*.
- Wet work and glove use favors irritant dermatitis, chronic paronychia and interdigital web intertrigo aggravated by *Candida albicans* infection.
- Allergic contact dermatitis is due mainly to rubber protection material and disinfectants for the skin and the working surfaces (chlorhexidine, formaldehyde, glutaraldehyde).
- Skin exposure to the feathers and particularly to the viscera and fluids can cause protein contact dermatitis and contact urticaria.

In this profession, live animals have to be killed before preparing for commercialization or freezing, in a process that is partially mechanized but needs frequent manual contact with the animals. Live animals (chicken, ducks, turkey) are received in cages, hanged upside down, stunned by electrical shock; their necks cut for exsanguination and they are dived in boiling water for scalding and plucking. After animals are decapitated, eviscerated manually, claws are removed, and the rest is cut into pieces, deboned, and sliced before packaging for sale and/or storage in the cold.

The first part is mostly a mechanical process in an assembly line fashion where workers mostly assist the operations. Nevertheless, they may get burns or electrical shocks by accident or when the machines need human correction. Also, in a poultry processing plant, more than 50% of live-chicken hangers developed callosities over the knuckles (knuckle pads) due to repeated contact with the metal shackles where live birds were placed (Richards et al. 1987).

By the 1970s and 1980s, poultry processing industry was considered as a high-risk industry for skin diseases (Marks et al. 1983; Hayashi et al. 1989), affecting mainly the hands and forearms. Poultry processors are exposed to wet work, biological aggressions, contact with animal fluids, feces and viscera, disinfectants and detergents for hand cleaning and for the hygiene of the working place,

and they may suffer cuts by knives, sharp objects, and bone fragments, especially the neck bones that are exposed after decapitation. Even though workers are advised to use plastic forearm shields and protective gloves, cotton plus rubber or vinyl gloves or chain mesh gloves to prevent cuts and abrasions, (Hayashi et al. 1989), its use can be difficult due to the subtle tasks to be performed.

Biological hazards are very frequent. Susceptible workers, mainly atopics, exposed to animals carrying mites like *Dermatophagoides* sp. or *Dermanyssus gallinae* (red poultry mite) may suffer acute prurigo mainly of the exposed areas (personal experience) or scabies-like lesions (Yassien et al. 1996). Skin abrasions and minor cuts by sharp objects, and especially by bone fragments, are often secondarily infected by *Pyogenic coccus* (*Staphylococcus aureus* and *Streptococcus*), eventually with sepsis (Barnham and Kerby 1984), or by *Erysipelothrix insidiosa*, the agent of Erysipeloid. Acute pyogenic paronychia or chronic paronychia and onychia, sometimes with interdigital intertrigo aggravated by *Candida albicans*, are favored mainly by the wet work, contact with aggressive chemicals, and glove occlusion. More than 40% of the workers, mostly those who handle blood, claws, or skin of raw or unfrozen chicken, develop hand and forearm wart, and wart-like lesions, induced by human papilloma virus (HPV), especially HPV type 7 (Stehr-Green et al. 1993; Keefe et al. 1994).

Wet work with regular hand cleaning with soaps, detergents, and disinfectants favors dry skin and irritant contact dermatitis, mainly in the eviscerating section (Marks et al. 1983). Direct contact of irritated hands with proteins from the viscera, blood, meat, and skin of these animals favors immediate allergic contact reactions – contact urticaria or protein contact dermatitis (Amaro and Goossens 2008). Immediate skin reactions from chicken and turkey meat have been mainly referred in food handlers (Hjorth and Roed-Peterson 1976; Katchen and Maibach 1991; Amaro and Goossens 2008), but a case of type I and IV allergy to chicken muscle and heart has been describe in a poultry eviscerator (Beck and Nissen. 1982).

Allergic contact dermatitis is mainly due to rubber products used for skin protection (gloves, aprons, rubber boots), cleansing, and disinfectant agents (formaldehyde,

■ Table 182.1

Contact irritants

Water (wet work)
Hand cleaning soap and detergents
Germicidal solutions
Detergents and cleansing products for the working place
Animal viscera – blood, enzymes, feces

■ Table 182.2

Contact allergens

Baseline series:	Thiuram mix, 1% pet (gloves, aprons)
	2-mercaptobenzothiazole, 2% pet (gloves, aprons)
	Mercapto mix, 2% pet (gloves, aprons)
	IPPD, 0.1% (black rubber boots)
	Formaldehyde, 1% aq. (cleaning solutions)
	Ethylenediamine dihydrochloride, 1% pet (medications)
	Wool alcohols, 30% pet (medications)
Additional allergens:	Chlorhexidine digluconate, 0.5% aq. (antiseptic solutions)
	Ammoniated mercury chloride, 1% pet (antiseptic solutions)
	Thiomersal, 0.1% pet (antiseptic solutions)
	Povidone-iodine, 5–10% aq. (antiseptic solutions)
	Glutaraldehyde 0.3% pet (working surface disinfectants)
	Chicken, duck or turkey meat, or viscera as is (open testing on lesional skin or prick test with immediate readings, for contact urticaria or protein contact dermatitis)

glutaraldehyde) or from medicaments used to treat or prevent dry skin (lanolin) or skin infection (antiseptics, ethylenediamine contained in Mycolog cream (Marks et al. 1983)). Allergic contact dermatitis can also occur due to exposure to the viscera and blood contaminated with animal feeding substances, like growth stimulants, antioxidants, vitamins, or antibiotics (chlorpromazine, terramycin, chlortetracycline, or virginiamycin), as occurred with dinitromide (a dinitrobenzene derivative to control chicken coccidiosis) (Bleumink and Nater 1973) (🔗 [Tables 182.1](#) and 🔗 [182.2](#)).

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