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properties, had identical antigens determined by means of the Denys phenomenon, and produced agglutination with serum taken from patients on the seventh day of the disease, in a dilution of 1:100-1:200. Agglutination tests using serum from five control persons proved to be negative.

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deletes

Conclusions

1. The above case of food poisoning was caused by the consumption of aspic that had been prepared with infringements of the sanitary regulations, it was caused by *Proteus vulgaris*.
2. Clinically, the majority of patients exhibited the syndrome of acute enterocolitis. The rectoromanoscopic and clinical findings approximated the pattern of acute low-grade dysentery.

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A CONTRIBUTION TO THE HYGIENIC EVALUATION OF PVC FLOOR TILES FOR APARTMENTS

(*K voprosu o gigenicheskoi otsenke poli-
vinilkhloridnykh plitok dlya pokrytiya
polov v kvartirakh*)

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The liberation of toxic substances from PVC tiles was investigated in the laboratory and in apartments with PVC floors. Questions to residents and direct observations were used to establish the presence and intensity of odor in the apartments, and to determine the prevalence of headaches and other symptoms of poisoning. Physiological studies were made of the effects of substances released by the plastics, including investigations of the functional status of the nervous system, blood pressure and pulse. Attention was paid to a propensity to chills, changes in the respiratory mucosa, and signs of disturbed function of the gastrointestinal and other systems.

On the basis of reported data on the thermoinsulating properties of PVC tile floors, we studied their effects on the microclimate in apartments (technical specifications of the tiles: TU UkrSSR 21-226-67 of the "Odesstroimaterialy" trust for the manufacture of building materials, in Odessa). Simultaneous microclimatic studies were made in similar apartments with wooden floors, in the same building. Air temperature and humidity were measured 0.5 and 1.5 m above floor level in living rooms and bedrooms; air velocity was also measured (the apartments are centrally heated).

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Under identical heating conditions, the air temperature in the rooms with PVC floors was 0.5–1° lower than in rooms with wooden floors. The difference between the temperatures at the two levels (0.5 and 1.5 m above the floor) was more marked in the rooms with PVC floors; the relative humidity was likewise 5–10% higher.

The occupants of apartments with PVC floors complained of a sensation of coldness, with marked coldness of the feet and frequent chills.

The volatiles released by PVC tiles were studied in the laboratory and in the field. The analysis was performed by the toxicological laboratory of the republican sanitary-epidemiological center. The tiles were investigated in a chamber simulating the conditions in occupied apartments (chamber volume 170 liter, tile area 2 m² per m³ capacity, air change factor 0.5).

The tiles were investigated 8 months after they were received from the factory. The concentration of vinyl chloride varied from 1.69 to 6.75 mg/m² over a period of 22 days at 20°, and was 6.53 and 0.95 mg/m², respectively, after 24 hr at 40 and 60°. The concentration of DBP ranged from 177 to 3,210 mg/m² over a period of 22 days at 20°; it was 13.4 and 450 mg/m², respectively, after 24 hr at 40 and 60°.

Air samples for the determination of volatiles were taken from the apartments 9, 11 and 14 months after the floors were laid. The apartments were left unaired for 14 hr before sampling. The air was sampled at the heights of 0.5 and 1.5 m above floor level (50 l air was drawn at the rate of 1 l/min). Vinyl chloride and DBP were determined titrimetrically. The results are listed in the table.

The liberation of considerable quantities of volatiles, including DBP, was shown by the odor in the apartments and by the occupants' complaints about a sharp irritating odor from the time they moved into the apartment. The odor was more intense in summer and when the premises were left unaired for a long period.

The effect of volatiles on the functions of the central and vegetative nervous systems and the cardiovascular system can be appraised from the following data. The three apartments with PVC floors had nine occupants—five adults (aged 30–39) and four children. The tenant V.K. (female), born 1930, who had lived in the apartment with PVC floors for a year, complained about stuffiness and a permanent odor in the apartment, and reported burning pain in the eyes, dizziness, lassitude, loss of appetite, irritability and wakefulness during the night. Her skin was pale. These symptoms had been absent before she moved into the apartment. Neurological examination revealed moderate weakening of the tendon reflexes, and tremor of the fingers when the hands were extended and the eyes closed. The tenant E.S. (female), born 1941, complained about stuffiness in the apartment (especially in winter, with closed windows). She suffered from continuous headaches, burning pain in the eyes, lacrimation, general lassitude, loss of appetite and wakefulness. She had mild flattening of the right nasolabial fold, and slight tremor of the hands.

Similar complaints were expressed by all the adults. In one of the apartments, a mother reported that her baby had had very frequent illnesses, with poor appetite and sleep, until the age of one year. Then it was moved to its grandmother in another apartment, and its condition returned to normal.

Vinyl chloride and DBP concentrations in the air of apartments

Apartment No.	Site	Floor space, m ²	Sampling height, m	Concentration, mg/m ³					
				after 9 months		after 11 months		after 14 months	
				vinyl chloride	DBP	vinyl chloride	DBP	vinyl chloride	DBP
8	Room	8	0.5	0.388	2008.4	Not detected	56.78	Not detected	Not detected
							51.04	"	"
							31.15	"	"
				0.193	79.07	"	54.08	0.237	"
							27.04	Not detected	
7	Corridor	6	0.5	0.874	86.98	"	187.13	Not detected	146.418
							97.35	"	
							10.81	"	
				Trace	54.08	"	97.21	0.379	Not detected
							43.26	Not detected	
7	Room	16	0.5	Not investi- gated		Not investi- gated		Trace	65.95
								0.284	Not detected
				"		"		0.474	10.85
7	Kitchen	6	1.5	"		"		0.379	Not detected

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The liberated volatiles irritated mucosae of the respiratory tract and eyes. Two tenants had conjunctivitis during the observation period. Diseases of the upper respiratory tract were common. Pulse and blood pressure measurements were performed in four tenants from apartments with PVC floors. In two of them, the blood pressure was low, 100/60 and 100/65 mm, respectively, and they had bradycardia (pulse rates, 62 and 61 per minute). The other two had normal blood pressures (110/70 and 105/65 mm) and pulse rates (75 and 72 per minute).

The occupants of the three apartments with wooden floors had normal blood pressures and pulse rates. They had no complaints like those which troubled the occupants of the apartments with PVC floors. The prolonged and intensive liberation of volatiles by the PVC tiles was apparently due to the characteristic hot dry climate of the southern steppe region of Moldavia.

Tiles of this kind cannot be recommended for floors of dwellings in this climatic zone.

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**CONTRIBUTION TO THE HYGIENIC
EVALUATION OF WORKING CONDITIONS
DURING THE INSTALLATION OF
EQUIPMENT IN NEW AUTOMATIC
TELEPHONE EXCHANGES**

*(K gigenicheskoi otsenke uslovii truda pri
montazhe oborudovaniya novykh avtomaticheskikh telefonnykh stantsii)*

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The development of the telephone system in the USSR necessitates the construction of large automatic telephone exchanges. One such exchange is assembled by groups of 50—100 assemblers working for 5 months to one year. However, no studies at all have been made of this work from the standpoint of hygiene. The literature only indicates that personnel occupied in the maintenance of telephone cable lines (Mytnik and Shevelyukhin) and the casting of lead plates for storage batteries (Tarabaeva; Danishevskii) may contract lead poisoning.

We studied the working conditions of personnel occupied in the installation of equipment in several large automatic telephone exchanges constructed according to standard designs. The work involved in the assembly of equipment in the operating rooms consists mainly in the fanning out of multiconductor cables, the bunching of varicolored conductors, and the soldering of wires and contacts with electric soldering irons and lead-containing solders (POS-60, POS-40). The characteristic features of this work are prolonged postural stress due to a strained working position (the soldering is performed at levels of up to 3.5 m above the floor), the