

COTTON GINNISHING TECHNOLOGY

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Annotation: in the state of izuchali na klopkozavode sodержanie pili v dushnoy srede tsehov, oceneno gryaznenie dhukha v work zone i vneshnee srede Also analyzed the behavior of organic dust and zdorove rabochikh, zanyatyh pererabotkoy rastitelnogo srya (cotton, kenaf, flax, etc.), prikovyvaet vse bolshee vnimanie research

Key words: cotton-syrets, fiber, production, collection, transportation, storage, pererabotka, klopkovy bunt, klopkoochistitelnye zavody, moduleukladchik.

Actuality:

The main operations of the production of cotton-syrtsa yavlyayutsya osnovnaya i predposevnaya obrabotka pochvy, pregotovka i vysev semyan, cultivation, borba s verditelyami i beleznyami, podgotovitelnye raboty k borke i uborko klopka, drie osnovnye i podgotovitelnye boty.

Vozdeystvie organicheskoy pyli na zdorove rabochikh, zanyatyx pererabotkoy rastitelnogo syrya (khlopok, kenaf, len i dr.), prikovyvaet vse bolshee vnimanie issledovateley. However, the development of pulmonary pathology, etiologically related to organic dust, has not been proven. Otechestvennye and zarubezhnye avtory mnogokratno otmechali, chto u danoy category workers often cause acute and chronic diseases, etiologically obuslovlennye influence of individual components organic dust (Shilling and Hyghes; Shilling; H. I. Smetanin \ i dr.). K ostrym zabolevaniyam etoy gruppy sleduet otnesti tak nazyvaemuyu fabrichnuyu lixoradku, sennuyu lixoradku, katary verkhnix dyxatelnyx putey i ostrye vazomotornye rinit; sredi kronicheskikh zabolevaniy — bissinosis, kronicheskie bronchitis with rare astmoid components, "cough weaver" and t. p.

Na obsledovannykh nami hlopkozavodakh primayutsya mery k okhrane atmosfernogo vozdukha ot zagryazneniya plyu putem osushchestvleniya special sanitarno-tekhnicheskikh meropriyatiy (mechanization and hermetization proizvodstvennykh protsessov, stroitelstvo pyleosadochnykh kamer, tsiklonov i dr.). Tem ne menee hlopkozavody ostayutsya eshche znachitelnyim istochnikom zagryazneniya plyu atmospheric, chto vyazano s osbennostyami proizvodstva, osnovnymi etapami kotorogo yavlyayutsya transportation hlopka-syrtsa po truboprovodam, eg drying and cleaning ot postoronnix primesey, separation of fibers and lint ot semyan, pressing of cotton and kipy, pererabotka otkhodov and others. Cotton-syrets eshe do postupleniya na zavod zagryaznyaetsya pochvenno-mineralnoy plyu pri sbore na field, osobenno xlopkouborochnymi car, na polevykh stanakh, pri podsushke i perevalke. In some cases, the rate of low-grade cotton reaches 20%. Na hlopkozavode transportirovka hlopka mezhdu tsehami, a takzhe ego dvinie v ochistitelyakh, djinnakh i linterakh osushchestvlyayutsya vozdukhnyimi potokami, i posle zaversheniya otdelnykh tsiklov otrabotannyi vozdukh vybrasyvaetsya v atmosferu, prokhodya chistku v pyleosadochnykh kamerakh i tsiklonakh. The main reasons for the vibration of dust and atmospheric air are the lack of efficiency of the dust collector, inadequate sealing of the aggregates, poor insulation of the dust collection site, and others.

Materials and Methods;

The main operations in raw cotton production include primary and pre-sowing tillage, seed preparation and sowing, cultivation, pest and disease control, pre-harvest preparation, cotton harvesting, and other primary and preparatory work.

The impact of organic dust on the health of workers engaged in the processing of plant materials (cotton, kenaf, flax, etc.) is attracting increasing attention from researchers. However, the existence of pulmonary pathologies etiologically

associated with organic dust has not yet been proven. Domestic and foreign authors have repeatedly noted that this category of workers often develop acute and chronic diseases etiologically caused by the influence of various components of organic dust (Shilling and Hyghes; Shilling; H. I. Smetanin, etc.). Acute diseases in this group include so-called factory fever, hay fever, catarrh of the upper respiratory tract, and acute vasomotor rhinitis. Among chronic diseases are byssinosis, chronic bronchitis with a frequent asthmatic component, "weaver's cough," etc.

We studied the dust content in the air of the gin's workshops and at distances of 300, 500, and 1000 meters from dust sources. Our primary objective was to identify the maximum airborne dust pollution, so we collected samples during operation of all workshops and during the processing of low-grade raw cotton. At each location, 30-40 samples were collected, and the results were determined gravimetrically, according to existing instructions. In the drying and cleaning shop, airborne dust levels ranged from 114.5 to 380.7 mg/m³ (average 222.5 ± 10.5 mg/m³), and in the gin and linter shop, they ranged from 53 to 324.4 mg/m³ (average 164.1 ± 12.1 mg/m³). At a wind speed of 3-15 m/s, a relative humidity of 37-56% and a temperature of 19-28°C at a distance of 300 m from the dust emission sources, its concentration in the atmosphere fluctuated from 15.1 to 48.2 mg/m³ (on average 26.3 ± 1.5 mg/m³). At a distance of 500 m from the cotton mill, the dust content in the atmosphere was within the range of 3.6-29.8 mg/m³ (12.7 ± 1.2 mg/m³), and at a distance of 1000 m, the dustiness of the air ranged from 3.2 to 12.5 mg/m³ (6.1 ± 0.5 mg/m³). With increasing distance from the emission sources, atmospheric pollution exceeded the maximum permissible dust concentration in the air (0.5 mg/m³) by tens of times. According to the cotton mill's management, 5,870 tons of raw cotton were processed in March 1973, yielding 1,903 tons of fiber, 3,421 tons of seed, 220 tons of lint, and 3 tons of cotton linters. 80 tons of waste were removed. Consequently, processing

approximately 6,000 tons of raw cotton per month releases 243 tons of cotton-mineral dust into the atmosphere.

A sanitary survey of approximately 400 residential buildings located southwest of the cotton mill was conducted, and over 1,500 residents of these buildings (prevailing northeasterly winds) were interviewed. It was found that dust-polluted air up to 500 meters from the mill makes it difficult to maintain cleanliness and order in the courtyard and living spaces. Cotton dust impairs the growing conditions for fruits and vegetables. Dust accumulates on tree branches, vegetables, and alfalfa. A layer of dust covers the soil near fences, on the banks of irrigation ditches, and elsewhere. Sparsely scattered cotton fibers (flying cotton) were found on the ground up to 1,000 meters from the cotton mill, and accumulations of cotton dust were found on some densely intertwined tree branches. A survey of the population revealed that on certain days (during strong winds and when low-grade cotton is being processed), significant dust levels are observed in the air, negatively impacting living conditions. However, according to residents, periods of significant dust levels last no more than 30-40 days a year, and the rest of the year there is no air pollution.

Discussion: Thus, the influence of dust on the living conditions of the local population has been discovered. It should also be taken into account that the mineral-organic dust from cotton gins is highly dispersed, containing 16-32% silicon dioxide and 39-57% silicates. In addition, it is abundantly contaminated with bacteria and mold fungi, and contains organochlorine pesticides. We believe that, given the desert-continental climate of the Khorezm oasis and the existing technology for cleaning raw cotton and its waste at cotton gins, the sanitary protection zone between them and residential areas should be at least 500 m. Sanitary and hygienic studies conducted at cotton gins have shown that most of them do not have sanitary protection gaps from residential areas. The cotton gins of many regional centers, built in the 1940s and 1950s, are surrounded by residential areas or directly adjacent to residential areas. The master plans for these

settlements called for the creation of protective zones within a 300-meter radius of the gins. Newly built gins (Shavat, Yangibazar, Bagat, and others), according to design documents, also have sanitary protection zones. However, when the master plans are implemented, these zones are often overgrown with residential and public buildings. The importance of protecting the atmosphere from cotton dust pollution increases due to the fact that after the completion of the hydraulic structures, the number of cotton processing plants will increase severalfold, and consequently, raw cotton production in the region.

Conclusions

1. Among individuals involved in processing cotton and kenaf, respiratory diseases resembling chronic bronchitis, sometimes accompanied by mild pulmonary emphysema, were observed. In cases of exposure to high concentrations of organic dust, an asthmoid component may also be present. No severe forms of byssinosis or factory fever were identified during either current examinations or retrospective analysis.

2. One of the etiological factors behind acute respiratory diseases in this worker group may be the presence of saprophytic and conditionally pathogenic fungal flora, which is consistently found in the air of workshops—particularly during the processing of low-grade plant materials.

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