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KARYERLARDA PORTLATISH ISHLARINI OLIB BORISHDA CHANG
AJRALIB CHIQISHINI KAMAYTIRISH SAMARADORLIGINI OSHIRISH.

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“Umumtexnik fanlar” kafedrası o’qituvchisi

Annotatsiya: Mazkur maqolada ochiq usulda qazib olish ishlari olib borilayotgan karyerlarda burg‘ilash va portlatish jarayonlarida hosil bo‘ladigan chang va zararli gazlarni kamaytirish usullari tahlil qilinadi. Burg‘ilashda sharoshkali va zarba-aylanma stanoklardan foydalanilganda chang tutish va chang bostirishning samarali mexanik va ho‘l usullari ko‘rib chiqiladi. Portlatish natijasida hosil bo‘ladigan chang-gaz bulutlarining shakllanish sabablari va ularni kamaytirish uchun gidrotexnik hamda texnologik choralar – suv tiqinlari, oldindan ho‘llash, bufer zonalar tashkil etish va sun‘iy shamollatish tadbirlari muhokama qilinadi. Chang tutish va bostirish usullarining samaradorligi amaliy tajribalar asosida baholanadi.

Kalit so‘zlar: burg‘ilash changi, chang bostirish, chang tutish qurilmalari, suv tiqini, havo-suv aralashmasi, portlatish changi, chang-gaz buluti, karyer atmosferasi, gidropasta, filtr tizimi.

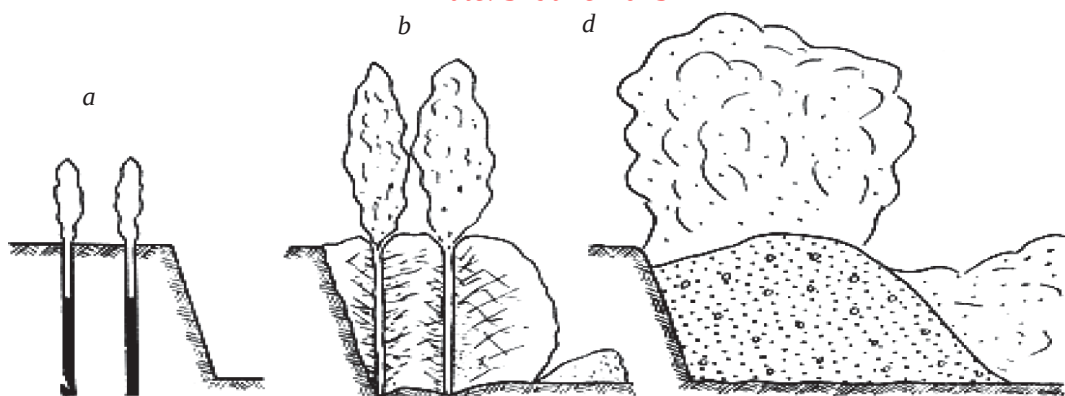
Kirish: Karyerlarda bajariladigan katta portlatishlar ko‘p chang va zararli gazlar ajralib chiqadigan manbalar hisoblanadi. Ayrim katta karyerlarda miqdori 1000 va undan ham ko‘p tonnaga ega bo‘lgan PM zaryadlari bir yo‘la portlatiladi.

Olib borilgan portlatishlarni nazorat qilish natijalari asosida portlash jarayonida, asosan, ikki ko‘rinishda chang-gaz buluti hosil bo‘lishi aniqlangan (4.3-rasm). Birlamchi bulut skvajina og‘zidan gazga aylanuvchi portlash mahsullari bilan birga chiqayotgan changdan hosil bo‘ladi. Bu bulut tarkibiga skvajina og‘zi yaqinida joylashgan zaryad kamerasi devorlaridan va burg‘ilash quyqasidan ajralib chiqayotgan juda mayda jins zarrachalari qo‘shiladi.

Portlash jarayonida otilib chiqqan jins bo‘laklarining pog‘ona ostiga tushib urilishi va kon massasining harakatlanishidan hosil bo‘lgan changning bir qismi atmosferaga qo‘shilib, ikkilamchi chang-gaz bulutini hosil qiladi.

Hosil bo‘lgan bulut bir minut ichida 150–250 m gacha ko‘tarilishi mumkin. Bu vaqt mobaynida bulutdagi gaz harorati atrof- muhitdagi havo haroratiga tenglashadi va shamol ta’sirida hara katlana boshlaydi. Bunda yirik chang fraksiyalarining bulutdan ajralib chiqib, pastga tushish jarayoni jadallashadi. Mayda chang zarrachalarining bulutdan ajralib chiqib, pastga tushishi bulutning katta masofada harakatlanishi mobaynida (2–3 km) sodir bo‘ladi.





1–rasm. PMni qisqa kechiktirish usulida portlatilganda chang-gaz bulutining sxemalari: *a*, *b*, *d* – mos ravishda kechiktirish vaqti 40, 600 va 3000 ms bo‘lganda.

Portlatishda hosil bo‘ladigan changning solishtirma miqdori quyidagi ifoda bo‘yicha aniqlanishi mumkin:

$$N_y = \frac{N_K \cdot V_{ob}}{Q_b},$$

bunda N_K – chang-gaz bulutidagi chang konsentratsiyasi, kg/m^3 ; V_{ob} – chang-gaz bulutining hajmi, m^3 ; Q_b – portlatiladigan blok hajmi, m^3 .

Portlatishdagi karyer havosi changlanishini ayrim texnologik, gidrochangsizlantirish va sun‘iy shamollatish tadbirlari orqali ham kamaytirish mumkin.

Changni bostiruvchi texnologik tadbirlar portlatish ishlarini takomillashtirishda qo‘llanadi. Bunda PM solishtirma sarfini kamaytirish texnologik tadbirning birinchi yo‘nalishi hisoblanadi. Bu esa, o‘z navbatida, zaryad bilan skvajina devorlari kontaktida jinslarning o‘ta maydalanishi va skvajina og‘zidan otilib chiqadigan changning kamayishini ta‘minlaydi. Portlatish ishlarini oldingi portlatishdan hosil bo‘lgan kon massasini to‘liq qazib olmasdan (25–30 m) bufer qoldirib, shuningdek, baland pog‘onalarni portlatishni siqilgan muhitda bajarish karyer havosi changlanishini kamaytirishning ikkinchi yo‘nalishini tashkil qiladi. Karyer havosining changlanishini kamaytirishga tarqoq (skvajina zaryadlari orasida havo qoldirilgan) zaryadlarni qo‘llash orqali ham erishish mumkin.

Suv yordamida changga qarshi kurashish usullaridan portlatishdan oldin va undan keyin ham foydalaniladi. Bunda kon massivini oldindan ho‘llash (suv shimdirish), suv tiqini, suvga to‘yintirilgan PM, gidropasta kabi changni kamaytirish usullaridan foydalaniladi.

Portlatiladigan blokka bevosita yaqin turgan yuzalarga oldindan suv yoki changni ho‘llovchi qo‘shimchalar sepish yuzalardagi changlarni havoga otilib chiqishini kamaytiradi. Bunda 1 m^2 yuzaga sepiladigan suv miqdori taxminan 10 litr bo‘lishi mumkin.

Suv tiqini ichki, tashqi va aralash bo‘lishi mumkin (4.4- rasm). Tashqi tiqin bevosita skvajina og‘zi atrofida joylashgan bo‘lib, bitta skvajina ustida bir necha polietilendan yasalgan sig‘imlardan yoki bir necha skvajinalar ustida bitta sig‘imdan tashkil topgan bo‘ladi. Suvga to‘ldirilgan polietilen sig‘imining balandligi 0,2 m ga teng bo‘ladi.

Ichki tiqin polietilendan yasalgan yeng ko‘rinishida bo‘lib, u skvajinadagi PM

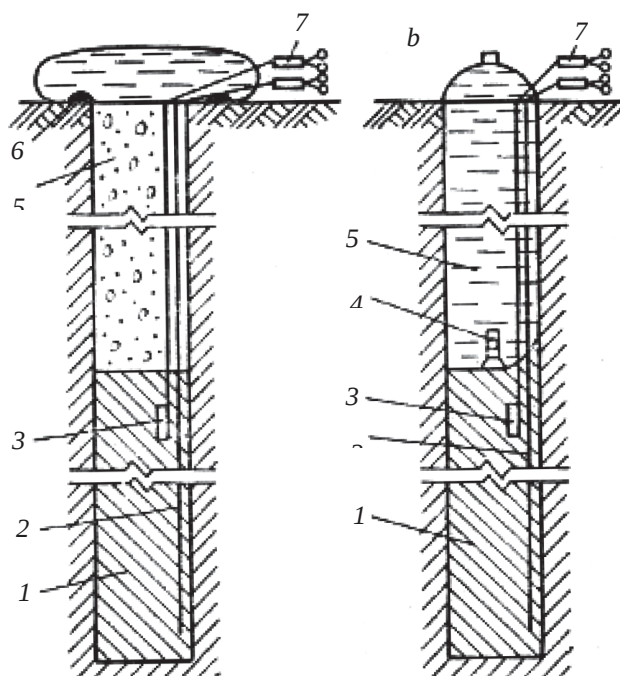


Date: 3rd June-2025

zaryadi ustiga tushiriladi va suv sepuvchi mashina yordamida suv bilan to'ldiriladi.

Karyerlarda ichki va tashqi suyuqlik tiqinlari kombinatsiyasidan ham foydalaniladi. Karyerlarda tashqi, ichki va aralash suyuqlik tiqinlaridan foydalanish natijasida quyidagilarga erishilgan: tashqi suv tiqinida chang bostirish samaradorligi 53 % ni, suvning solishtirma sarfi $1,04 \text{ kg/m}^3$; ichki suv tiqinida mos ravishda 84,7 % ni va $0,79 \text{ kg/m}^3$; aralash suv tiqinida esa, mos ravishda 89,4 % va $1,38 \text{ kg/m}^3$ ni tashkil qilgan.

va



2 – rasm. Skvajina suv tiqini sxemasi: a va b – mos ravishda tashqi ichki tiqin; 1 – skvajina zaryadi; 2 – detonatsiya piligi; 3 – patron-boyevik; 4 – kondensator; 5 – tiqin; 6 – PM qo'shimcha zaryadi; 7 – KZDSH.

Portlatishdan so'ng changga qarshi kurashishda qo'llanadigan havo-suv oqimi chang bostirishning samarali usuli hisoblanadi. Havo-suv oqimidan foydalanish qazishdan

bo'shagan maydondagi mavjud changlardan havoni tozalash bilan birga, chang bostirilishi lozim bo'lgan katta maydonlar sathiga suyuqlik tomchilarini bir tekis tarqalishini ham ta'minlaydi.

Xulosa: Ochiq karyerlarda olib boriladigan burg'ilash va portlatish jarayonlari natijasida hosil bo'ladigan chang miqdorini kamaytirish konchilar salomatligi va atrof-muhitni muhofaza qilish nuqtayi nazaridan dolzarb muammodir. Burg'ilashda ho'l chang bostirish usullari va ko'p bosqichli chang tutish qurilmalarining qo'llanilishi havodagi chang konsentratsiyasini sezilarli darajada kamaytiradi. Portlatish vaqtida hosil bo'ladigan chang-gaz bulutini cheklash uchun texnologik va gidrotexnik tadbirlar – suv tiqinlari, skvajina parametrlarini optimallashtirish va oldindan namlash samarali yechim bo'lib xizmat qiladi. Ushbu usullarni kompleks qo'llash orqali kon havosining ekologik holatini yaxshilash va ishlab chiqarish xavfsizligini oshirish mumkin.

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Date: 3rd June-2025

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Date: 3rd June-2025

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Date: 3rd June-2025

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Date: 3rd June-2025

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